2006-08 TRANSMISSION

Manual Transmission (6-Speed)(Except Hybrid) - Civic

6-SPEED MANUAL TRANSMISSION

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
*①	07GAJ-PG20110	Mainshaft Holder	1
*②	07GAJ-PG20130	Mainshaft Base	1
③	07JAD-PL90100	Oil Seal Driver	1
④	07NAD-P20A100	Oil Seal Driver Attachment	1
**⑤	07736-A01000B	Adjustable Bearing Puller, 20—40 mm	1
⑥	07746-0010300	Attachment, 42 x 47 mm	1
⑦	07746-0030100	Driver, 40 mm I.D.	1
⑧	07746-0030300	Attachment, 30 mm I.D.	1
⑨	07749-0010000	Driver	1

* Part of Mainshaft Inspection Tool Set, 07GAJ-PG20102.
* * Must be used with commercially available 3/8"-16 UNF Slide Hammer.

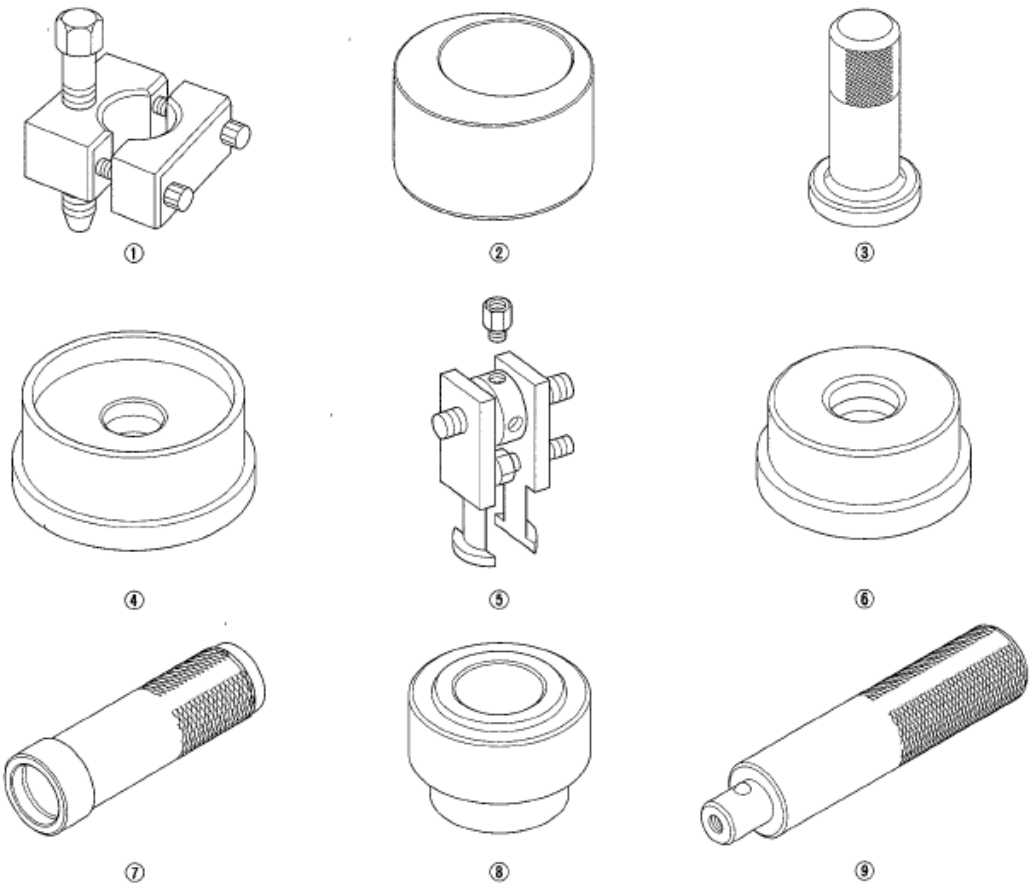


Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REVERSE LOCKOUT SYSTEM

GENERAL TROUBLESHOOTING INFORMATION

How to Troubleshoot Circuits at the ECM Connectors

NOTE: The ECM overwrites data and monitors the EVAP system for up to 15 minutes after the ignition switch is turned to OFF. Jumping the SCS line after turning the ignition switch to LOCK (0) cancels this function. Disconnecting the ECM during this function, without jumping the SCS line first, can damage the ECM.

1. Jump the SCS line with the HDS.
2. Remove the cover (A).

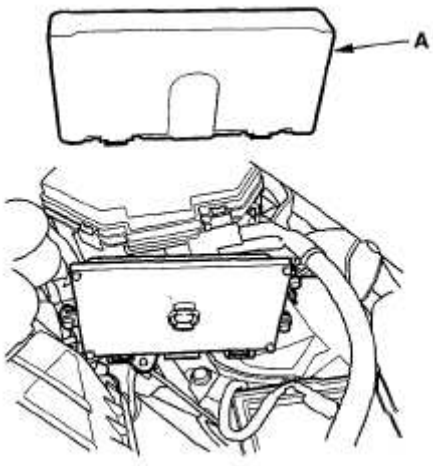


Fig. 2: Identifying Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Lift up the under-hood fuse/relay box (D).

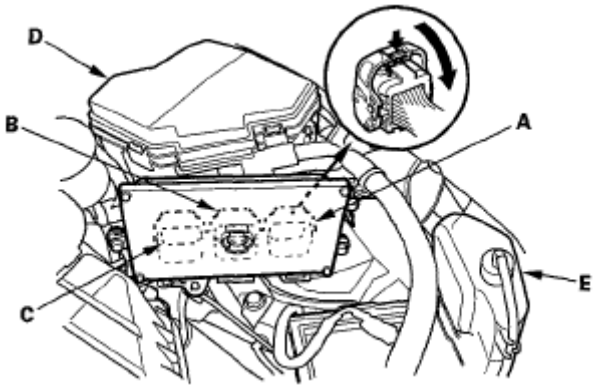


Fig. 3: Identifying Under-Hood Fuse/Relay Box And ECM Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the coolant reservoir (E). Disconnect ECM connectors A, B, and C.

NOTE: ECM connectors A, B and C have a symbols (A = [], B = triangle symbol , C = o) embossed on them for identification.

5. When diagnosis/troubleshooting is done at the ECM connector, use the terminal test port (A) above the terminal you need to check.

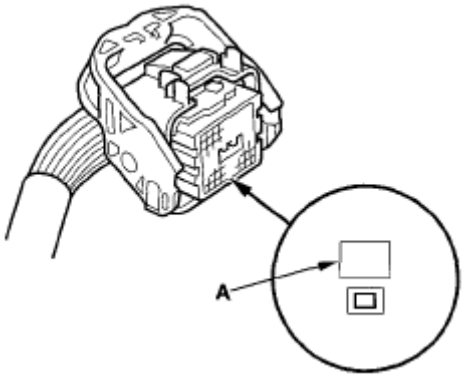


Fig. 4: Identifying Terminal Test Port
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect one side of the patch cord (A) terminals to a commercially available digital multimeter (B), and connect the other side of the patch cord terminals to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (C).

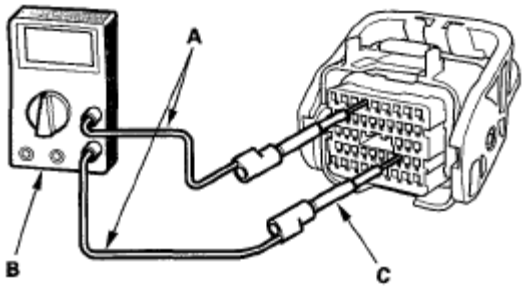


Fig. 5: Connecting Patch Cord Terminals To Digital Multimeter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTE:

- **For accurate results, always use the pin probe (male).**
- **To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.**
- **Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.**

COMPONENT LOCATION INDEX

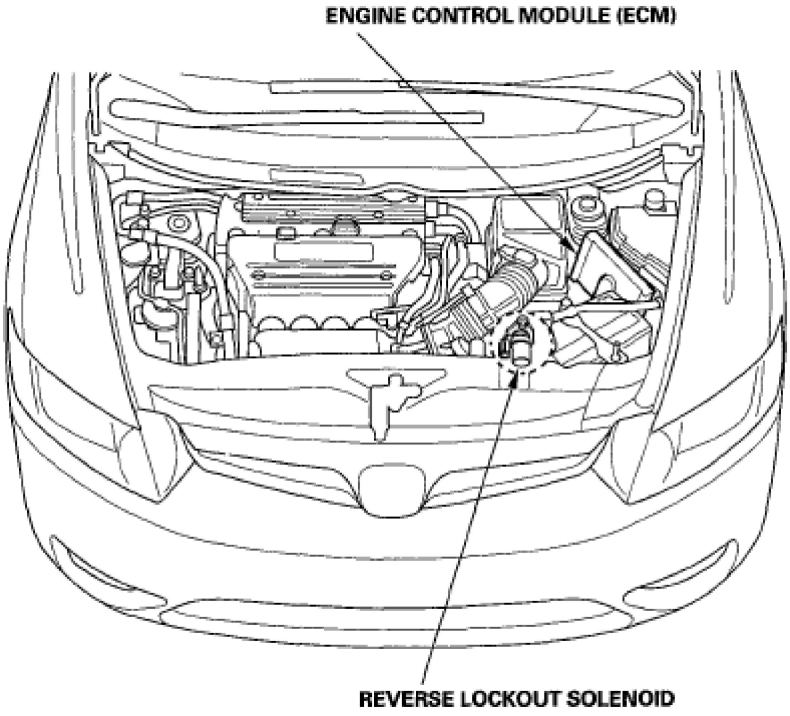


Fig. 6: Identifying Reverse Lockout System Component Location Index
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYSTEM DESCRIPTION

At a vehicle speed of 12 mph (20 km/h) or more, the ECM receives a signal from the output shaft (countershaft) speed sensor and activates the reverse lockout solenoid, which pushes select lock cam B into the locked position. As a result, the select lever can not rotate to the reverse select position, making it impossible to engage reverse gear. At a vehicle speed of 9 mph (15 km/h) or less, the signal from the output shaft (countershaft) speed sensor is interrupted, the ECM turns off the reverse lockout solenoid. The select lock return spring pulls back select lock cam B, enabling the select lever to move freely so the reverse gear can be selected.

VEHICLE SPEED CHART

Vehicle speed	Inhibitor	Reverse selection
Above 12 mph (20 km/h)	ON	Not allowed
Below 9 mph (15 km/h)	OFF	Allowed
Ignition switch LOCK (0)	OFF	Allowed

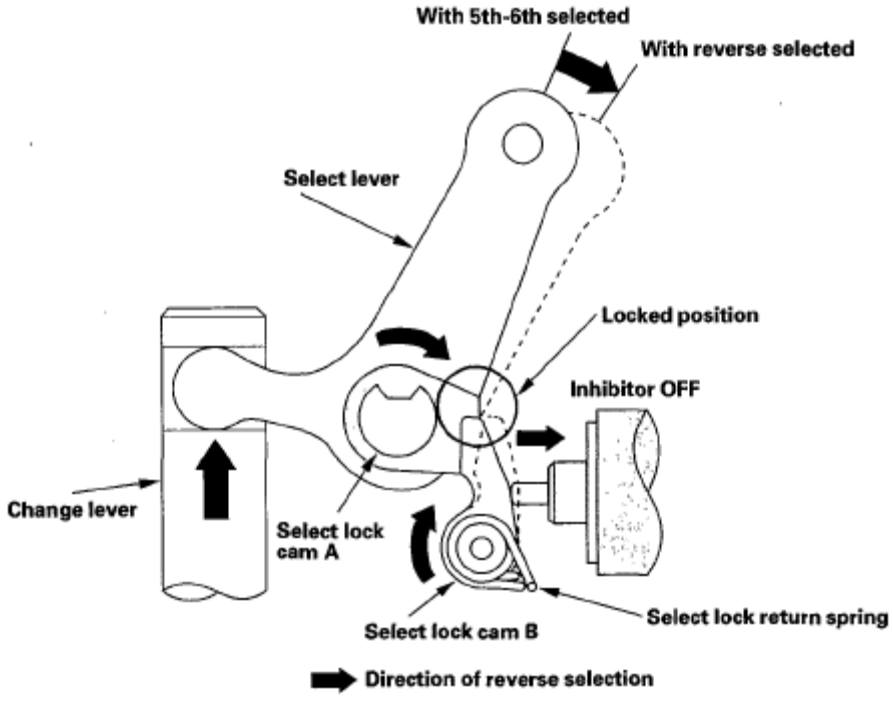


Fig. 7: Reverse Lockout System Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

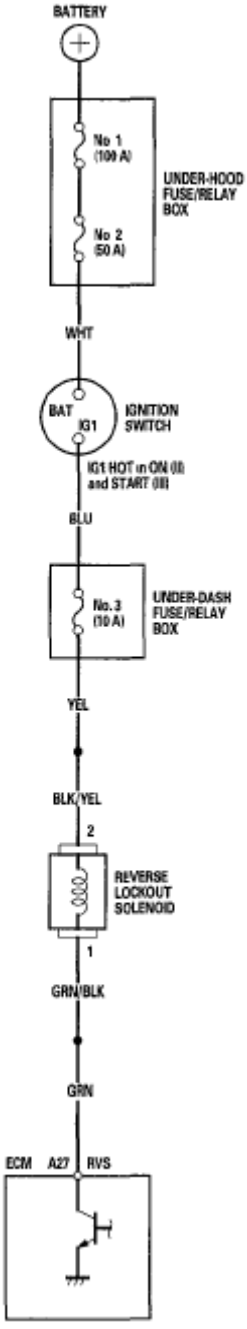


Fig. 8: Reverse Lockout System - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT TROUBLESHOOTING

1. Check the No. 3 (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

YES -Go to step 2.

NO -Replace the fuse, and recheck.

2. Start the engine, and check the Malfunction Indicator Lamp (MIL).

   Does the MIL come on?

   YES -Troubleshoot the DTC (see **GENERAL TROUBLESHOOTING INFORMATION**), and recheck.

   NO -Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Shift into reverse.

   Can you shift the transmission into reverse?

   YES -Go to step 5.

   NO -Repair the transmission, and recheck.

5. Raise the vehicle on the lift, make sure it is securely supported, and allow the front wheels to rotate freely.
6. Start the engine. With the vehicle moving slowly (vehicle speed below 9 mph (15 km/h), shift the transmission into reverse, but do not release the clutch pedal.

   Can you shift the transmission into reverse?

   YES -Go to step 7.

   NO -Turn the ignition switch to LOCK (0), then go to step 20.

7. Shift the transmission into 1st gear, and lightly press the throttle until the speedometer reads above 12 mph (20 km/h). Try to the shift the transmission into reverse.

Can you shift the transmission into reverse?

YES -Go to step 8.

NO -Intermittent failure, system is OK at this time.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the reverse lockout solenoid 2P connector (A).

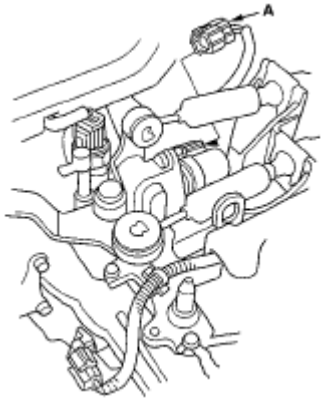


Fig. 9: Identifying Reverse Lockout Solenoid 2P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Turn the ignition switch to ON (II).
11. Measure the voltage between the reverse lockout solenoid 2P connector terminal No. 2 and body ground.

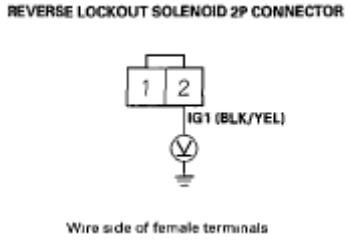


Fig. 10: Measuring Voltage Between Reverse Lockout Solenoid 2P Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 12.

NO -Check for loose terminals or poor connections at connector. If the connections are OK, repair open or short in the wire between No. 3 (10 A) fuse in the under-dash fuse/relay box and the reverse lockout solenoid.

12. Turn the ignition switch to LOCK (0).
13. Remove the reverse lockout solenoid (see **REVERSE LOCKOUT SOLENOID TEST**).
14. At the reverse lockout solenoid side, connect the reverse lockout solenoid 2P connector terminal No.2 to the battery positive terminal, and connect the terminal No. 1 to the battery negative terminal. Make sure the reverse lockout solenoid works.

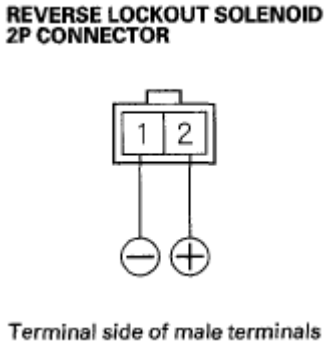


Fig. 11: Connecting Reverse Lockout Solenoid 2P Connector Terminal To Battery Positive Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does the reverse lockout solenoid work properly?

YES -Go to step 15.

NO -Replace the reverse lockout solenoid (see **REVERSE LOCKOUT SOLENOID TEST**).

15. Reinstall the reverse lockout solenoid, and reconnect the reverse lockout solenoid 2P connector.
16. Jump the SCS line with the HDS.

17. Disconnect ECM connector A (44P).
18. Turn the ignition switch to ON (II).
19. Measure the voltage between ECM connector A27 and body ground.

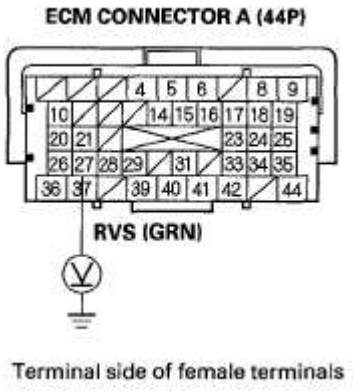


Fig. 12: Measuring Voltage Between ECM Connector Terminals A27 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Check for loose terminals or poor connections at ECM connector A (44P). If necessary, update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

NO -Repair open in the wire between the reverse lockout solenoid and ECM (A27).

20. Jump the SCS line with the HDS.
21. Disconnect ECM connector A (44P).
22. Disconnect the reverse lockout solenoid 2P connector.
23. Check for continuity between the reverse lockout solenoid 2P connector terminal No. 1 and body ground.

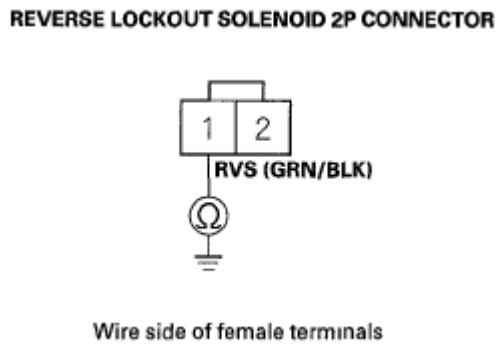


Fig. 13: Checking Continuity Between Reverse Lockout Solenoid 2P Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the reverse lockout solenoid and the ECM (A27).

NO -Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

REVERSE LOCKOUT SOLENOID TEST

1. Remove the reverse lockout solenoid (see **REVERSE LOCKOUT SOLENOID TEST**).
2. Connect battery positive terminal to the reverse lockout solenoid 2P connector No. 2 terminal, and connect the battery negative terminal to the No. 1 terminal.

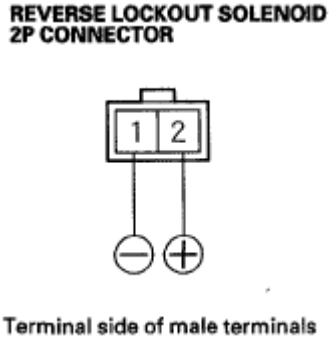


Fig. 14: Connecting Reverse Lockout Solenoid 2P Connector Terminal To Battery Positive Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Make sure the reverse lockout solenoid works. If the reverse lockout solenoid does not work, replace it.

REVERSE LOCKOUT SOLENOID DISASSEMBLY/REASSEMBLY

1. Make sure you have the anti-theft code for the audio system or the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery, then disconnect the positive cable.
3. Remove the battery.
4. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
5. Remove the battery base (see step 6).
6. Disconnect the output shaft (countershaft) speed sensor connector, back-up light switch connector, and reverse lockout solenoid connector (see step 8).
7. Carefully remove the shift cables, and cable bracket together to avoid bending the shift cables (see step 9).
8. Remove the three bolts (A) and reverse lockout solenoid (B).

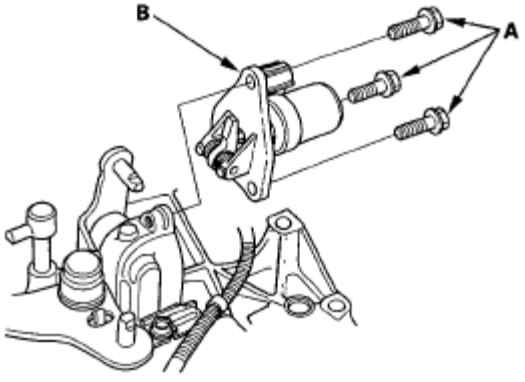


Fig. 15: Identifying Reverse Lockout Solenoid And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the roller (A), the select lock return spring (C), and select lock cam B.

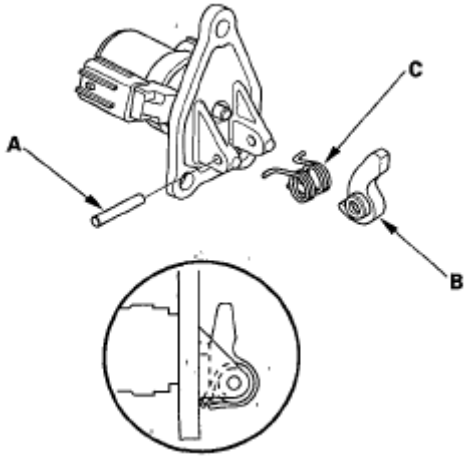


Fig. 16: Identifying Roller And Select Lock Return Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the components in the reverse order of removal.
11. Clean any the dirt and oil from the sealing surface.
12. Apply liquid gasket, P/N 08718-0001 evenly to the transmission housing mating surface of the reverse lockout solenoid. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

13. Install the reverse lockout solenoid.

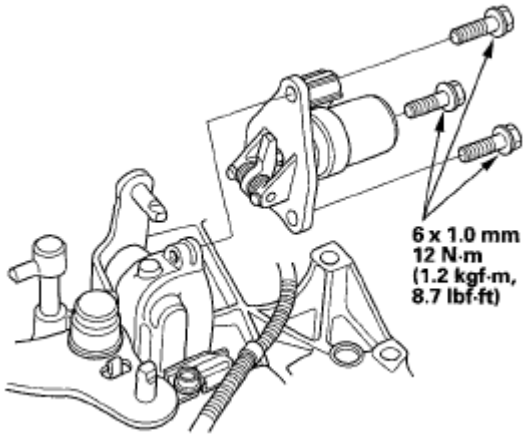


Fig. 17: Identifying Reverse Lockout Solenoid And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install the cable bracket and shift cables (see step 37).
15. Connect the reverse lockout solenoid connector, back-up light switch connector, and output shaft (countershaft) speed sensor connector (see step 39).
16. Install the battery base (see step 41).
17. Install the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
18. Install the battery. Clean the battery posts and cable terminals. Connect the positive cable to the battery, then connect the negative cable, and apply multipurpose grease to prevent corrosion.
19. Enter the anti-theft code for the audio system or the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).
20. Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW CONTROL UNIT**).

MANUAL TRANSMISSION

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Probable cause	Diagnostic procedure

	(s)	
Hard to shift into 1st gear	1. 1st synchro ring defective. 2. 1st/2nd synchro sleeve and hub defective. 3. 1st gear defective. 4. Change lever assembly defective.	• Check the 1st synchro ring (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the 1st/2nd synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check 1st gear (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into 2nd gear	1. 2nd synchro ring defective. 2. 1st/2nd synchro sleeve and hub defective. 3. 2nd gear defective. 4. Change lever assembly defective.	• Check the 2nd synchro ring (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the 1st/2nd synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check 2nd gear (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
	1. 3rd synchro ring defective. 2. 3rd/4th synchro sleeve and	• Check the 3rd synchro ring (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the 3rd/4th synchro sleeve and hub (see **SYNCHRO SLEEVE AND**

Hard to shift into 3rd gear	hub defective. 3. 3rd gear defective. 4. Change lever assembly defective.	**HUB INSPECTION AND REASSEMBLY**). • Check 3rd gear (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into 4th gear	1. 4th synchro ring defective. 2. 3rd/4th synchro sleeve and hub defective. 3. 4th gear defective. 4. Change lever assembly defective.	• Check the 4th synchro ring (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the 3rd/4th synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check 4th gear (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into 5th gear	1. 5th synchro ring defective. 2. 5th/6th synchro sleeve defective. 3. 5th gear defective. 4. Change lever assembly defective.	• Check the 5th synchro ring (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the 5th/6th synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check 5th gear (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
	1. 6th synchro	• Check the 6th synchro ring (see

Hard to shift into 6th gear	ring defective. 2. 5th/6th synchro sleeve defective. 3. 6th gear defective. 4. Change lever assembly defective.	**SYNCHRO RING AND GEAR INSPECTION**). • Check the 5th/6th synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check 6th gear (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into reverse	1. Reverse shift fork defective. 2. Reverse idler gear defective. 3. Reverse gear defective. 4. Change lever assembly defective. 5. Reverse lockout system defective.	• Check the reverse shift fork (see **REVERSE SHIFT FORK CLEARANCE INSPECTION**). • Check the reverse idler gear (see **REVERSE SHIFT FORK CLEARANCE INSPECTION**). • Check reverse gear. • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**). • Check the reverse lockout system (see **CIRCUIT TROUBLESHOOTING**).
Noise from the transmission	1. Low transmission fluid level. 2. Worn or damaged transmission gears.	• Check the transmission fluid level (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**). • Check the transmission gears.

	3. Worn or damaged transmission bearings.	• Check the transmission bearings.
Shift lever does not operate smoothly	1. Shift cable defective. 2. Joint in shift cable and transmission or body.	• Check the shift cables. • Check the joint in the shift cables (see **GEARSHIFT MECHANISM REPLACEMENT**).
Transmission jumps out of gear	1. Detent ball springs defective. 2. Worn synchro teeth.	• Check the detent ball springs. • Check the synchro teeth.

TRANSMISSION FLUID INSPECTION AND REPLACEMENT

1. Raise the vehicle on a lift.
2. Remove the filler plug (A) and sealing washer (B), check the condition of the fluid, and make sure it is at the proper level (C).

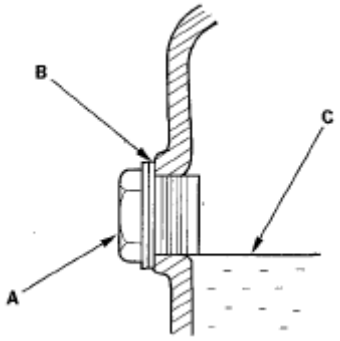


Fig. 18: Identifying Filler Plug And Sealing Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If the fluid is dirty, remove the drain plug (A), and sealing washer (B) drain it.

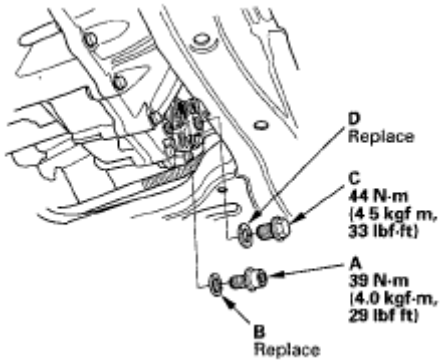


Fig. 19: Identifying Drain Plug And Sealing Washer w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the drain plug with a new sealing washer, and refill the transmission fluid to the proper level.

   Fluid Capacity

   1.5 L (1.6 US qt) at fluid change

   1.7 L (1.8 US qt) at overhaul

   Always use Honda Manual Transmission Fluid (MTF). Using engine oil can cause stiffer shifting because it does not contain the proper additives.

5. Install the filler plug (C) with a new sealing washer (D).
6. If the maintenance minder required to replace the fluid, reset the maintenance minder (see **MAINTENANCE MINDER**).

   If it did not reset, select BODY ELECTRICAL, GAUGES, ADJUSTMENT, MAINTENANCE MINDER, RESET, MAINTENANCE SUB ITEM 3 with the HDS.

BACK-UP LIGHT SWITCH TEST

1. Disconnect the back-up light switch connector (A).

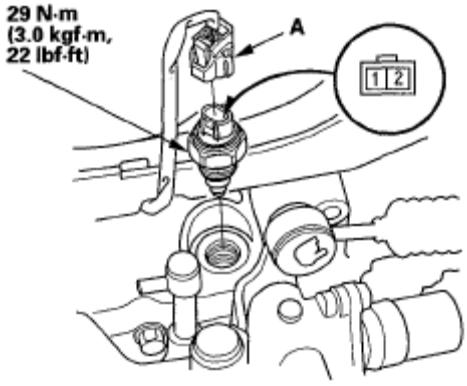


Fig. 20: Identifying Back-Up Light Switch Connector w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check for continuity between the back-up light switch 2P connector terminals No. 1 and No. 2. There should be continuity when the change lever is only in reverse.
3. If necessary, replace the back-up light switch. Apply liquid gasket (P/N 08718-0001) evenly to the threads of the transmission housing. Install the switch within 5 minutes of applying the liquid gasket. Tighten the back-up light switch to the specified torque.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

TRANSMISSION REMOVAL

Special Tools Required

- Engine hanger/adapter VSB02C000015
- Engine support hanger, A & Reds AAR-T-12566
- Front subframe adapter VSB02C000016
- 2006 Civic engine hanger VSB02C000025

These special tools are available through the Honda Tool and Equipment Program

1-888-424-6857.

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Make sure you have the anti-theft code for the audio system or the navigation system (if equipped), then write down the audio presets.
2. Remove the cowl cover and under-cowl panel (see **COWL COVER REPLACEMENT**).
3. Disconnect the negative cable from the battery, then disconnect the positive cable.
4. Remove the battery.
5. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
6. Remove the harness clips (A) and the intake air duct (B), then remove the battery base (C) with the coolant reservoir (D).

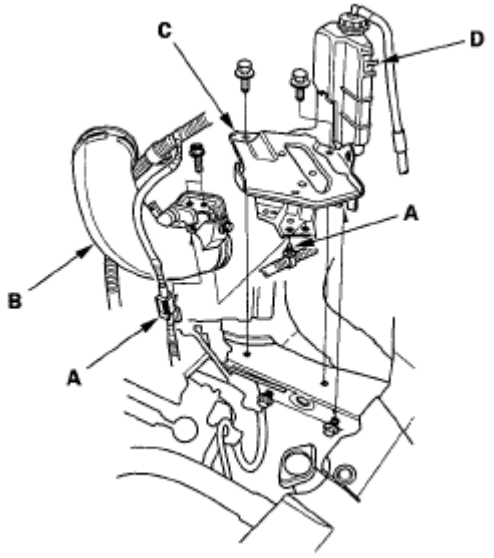


Fig. 21: Identifying Intake Air Duct And Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the clutch line bracket (A), then carefully remove the slave cylinder (B) to avoid bending the clutch line.

NOTE: Do not press the clutch pedal after the slave cylinder

has been removed.

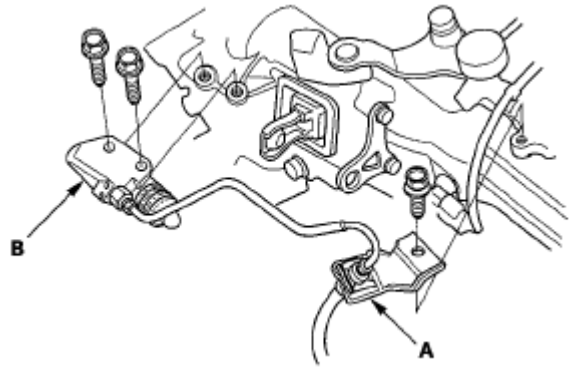


Fig. 22: Identifying Clutch Line Bracket And Slave Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Disconnect the back-up light switch connector (A), the output shaft (countershaft) speed sensor connector (B), the reverse lockout solenoid connector (C), and the harness clips (D).

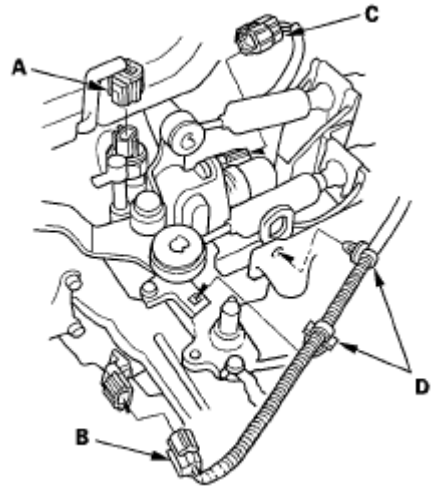


Fig. 23: Identifying Back-Up Light Switch Connector And Countershaft Speed Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the cotter pins (A) and lock pins (B), shift cable bracket (C), then disconnect the shift cables (D) from the top of the transmission housing. Carefully remove both cables and the bracket together to avoid bending the cables.

'06 model

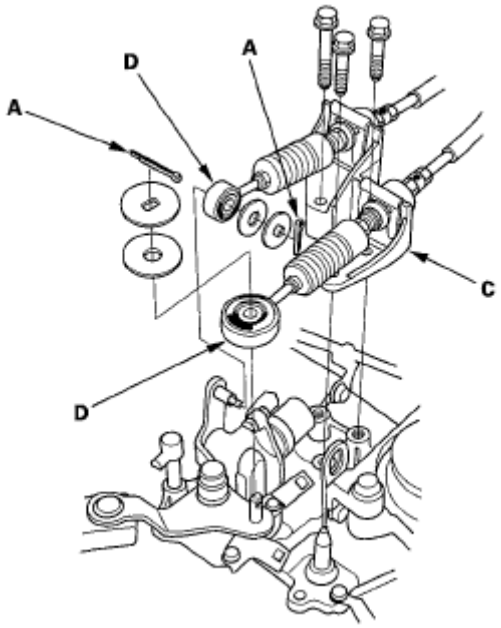


Fig. 24: Identifying Shift Cable Bracket Cotter Pins And Lock Pins (06 Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

'07-08 models

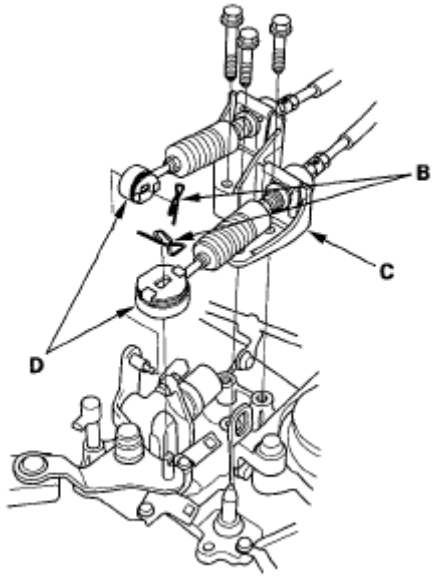


Fig. 25: Identifying Shift Cable Bracket Cotter Pins And Lock Pins (07-08

Models)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the harness clips (A) from the clutch cable bracket (B) and harness bracket (C).

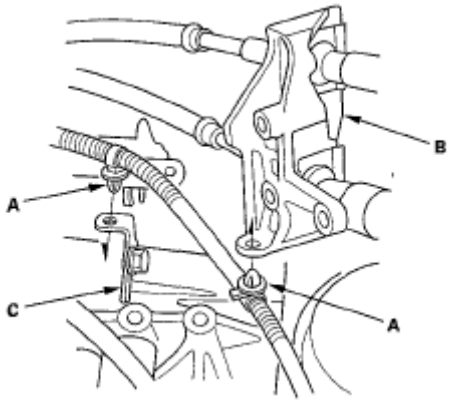


Fig. 26: Identifying Clutch Cable Bracket And Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the air cleaner housing bracket (A).

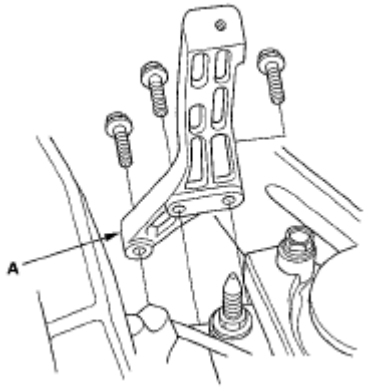


Fig. 27: Identifying Air Cleaner Housing Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove the engine wire harness cover (A) by lifting up on the lock tab (B), then slide the harness forward off the air cleaner housing mounting bracket (C).

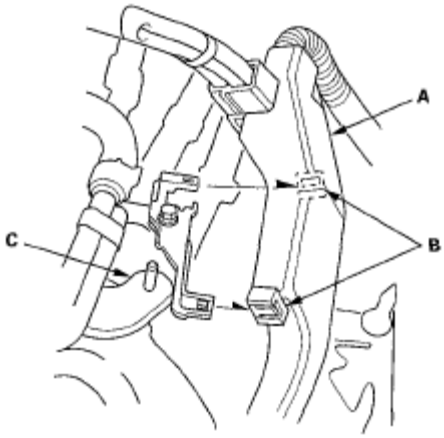


Fig. 28: Identifying Engine Wire Harness Cover On Lock Tab
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Attach the engine hanger (A) to the threaded holes in the cylinder head.

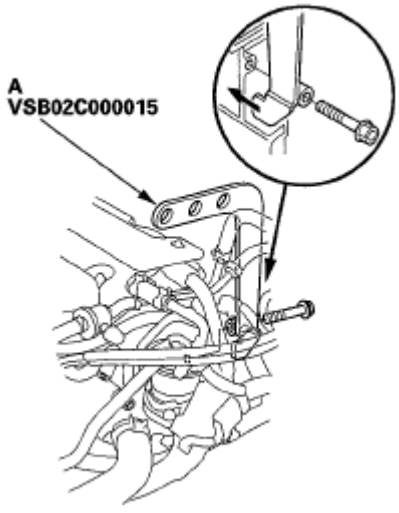


Fig. 29: Identifying Engine Hanger
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install the front leg assembly (A), hook (B), and wingnut (C) from an A and Reds engine support hanger (AAR-T-12566) onto the 2006 Civic engine hanger. Carefully position the engine hanger on the vehicle, and attach the hook to the forward hole in the engine hanger/adapter (D). Tighten the wingnut by hand to lift and support the engine/transmission assembly.

NOTE: Use care when working around the windshield.

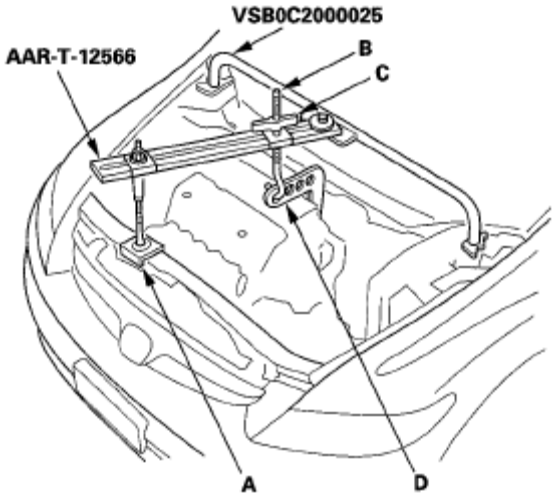


Fig. 30: Identifying Front Leg Assembly With Hook And Wingnut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the two upper transmission mounting bolts.

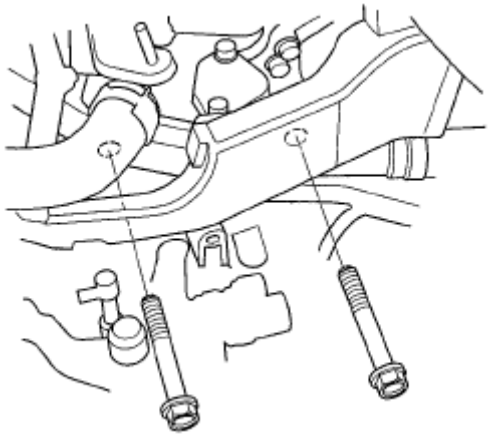


Fig. 31: Identifying Upper Transmission Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Remove the under-hood fuse/relay box (A) by lifting up on the lock tabs (B), then move it aside.

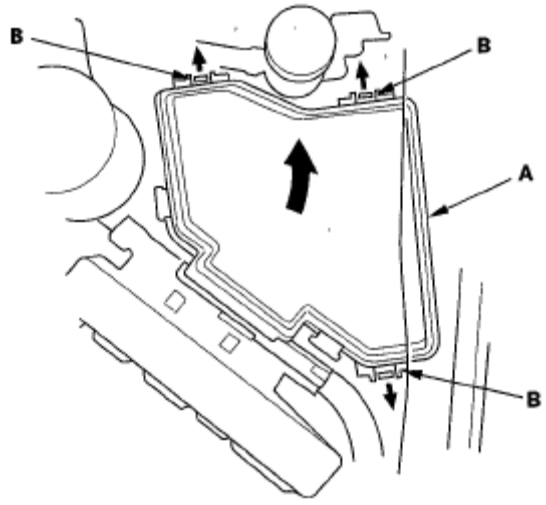


Fig. 32: Identifying Under-Hood Fuse/Relay Box On Lock Tabs
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Remove the engine control module (ECM) stay (A), then move it aside. Remove the clutch line clamp (B).

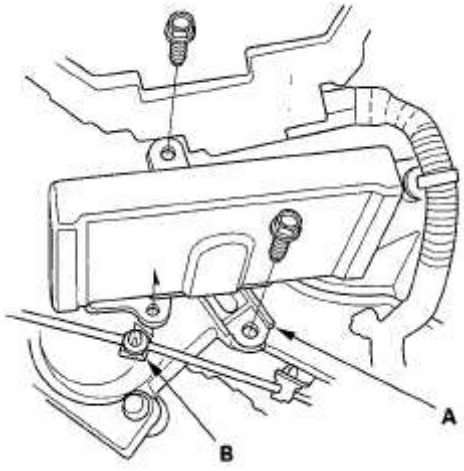


Fig. 33: Identifying Engine Control Module (ECM) Stay And Clutch Line Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Disconnect the ground cable (A), then remove the transmission mount bracket bolts (B) and nuts (C). Remove the transmission mount bracket (D).

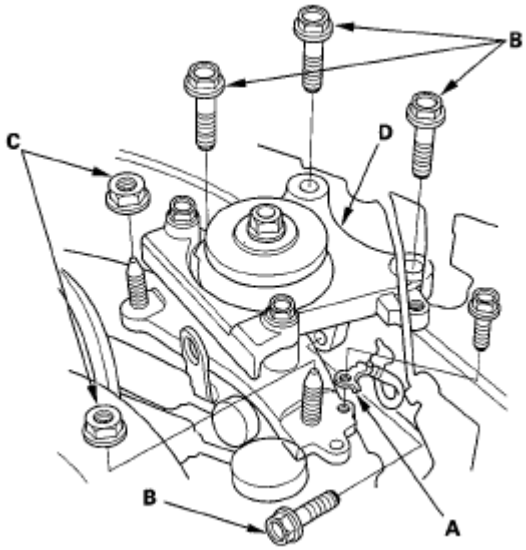


Fig. 34: Identifying Transmission Mount Bracket Bolts And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Raise the vehicle on the lift.
20. Remove the splash shield.

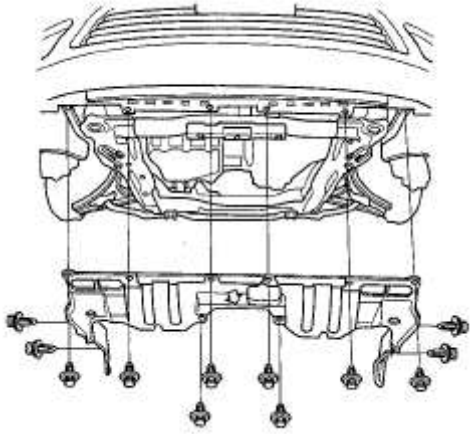


Fig. 35: Identifying Splash Shield And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Drain the transmission fluid. Reinstall the drain plug with a new washer (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
22. Separate the lower arm (see step 5 on **DRIVESHAFT REMOVAL**).
23. Remove the stiffner plate (A) and mounting bracket (B) from the steering

gearbox. Disconnect the exhaust mounting rubber (C).

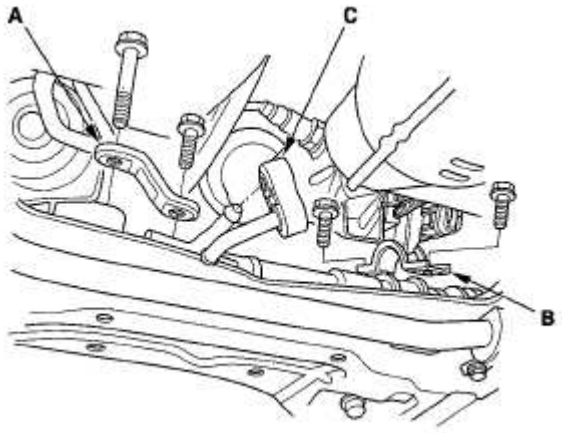


Fig. 36: Identifying Stiffner Plate And Mounting Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Remove the stiffner plate (A) and harness clip (B).

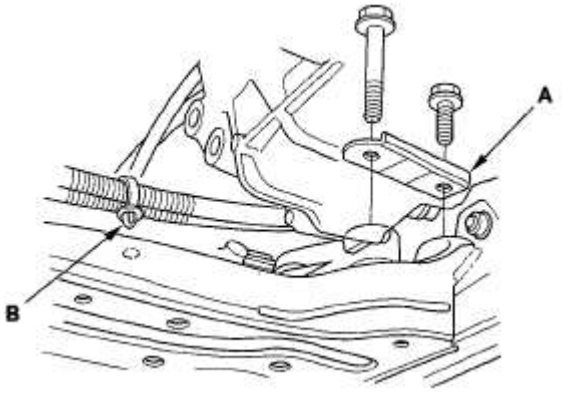


Fig. 37: Identifying Stiffner Plate And Harness Clip
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Remove the front mount mounting bolt (A) and nut (B) then, remove the lower radiator hose from the front mount bracket.

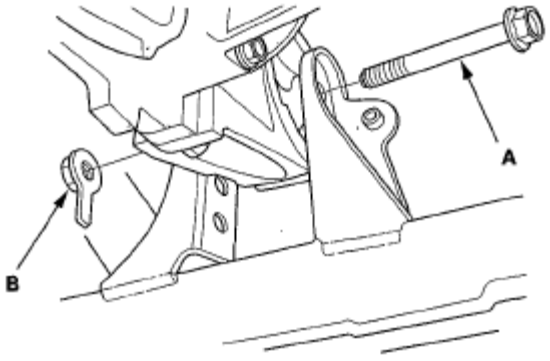


Fig. 38: Identifying Front Mount Mounting Bolt And Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Remove the front engine mount bracket (A) from the transmission and engine.

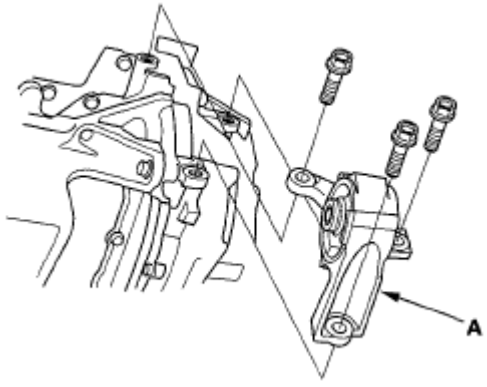


Fig. 39: Identifying Front Engine Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Remove the lower torque rod mounting bolt.

Fig. 40: Identifying Lower Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Remove the middle subframe mounting bolts (A).

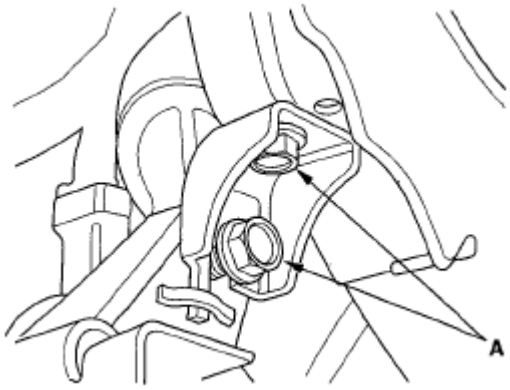


Fig. 41: Identifying Middle Subframe Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Note the reference marks (A) on both sides of the subframe that lines up with the body (B).

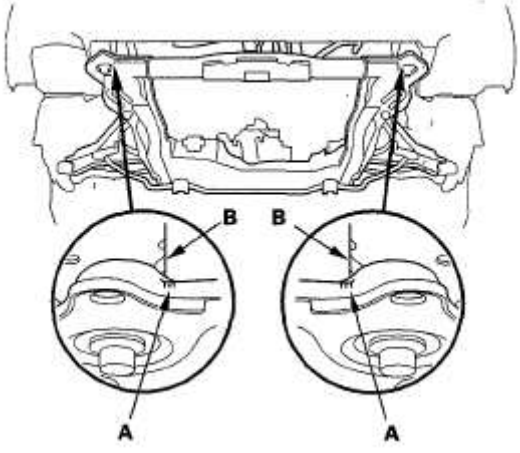


Fig. 42: Identifying Marks On Both Sides Of Subframe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Attach the front subframe adapter to the front subframe by wrapping the band over the front subframe and attaching the end of the band to the front subframe adapter with the pin (A).

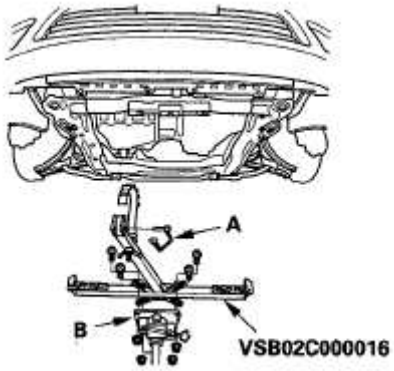


Fig. 43: Identifying Front Subframe Adapter With Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

31. Raise the jack, and line up the slots in the arms with the bolt holes on the corner of the jack base (B), then attach them securely.
32. Remove the front subframe mounting bolts (A) and front subframe (B).

NOTE: Suspend the steering gearbox with an appropriate size wire.

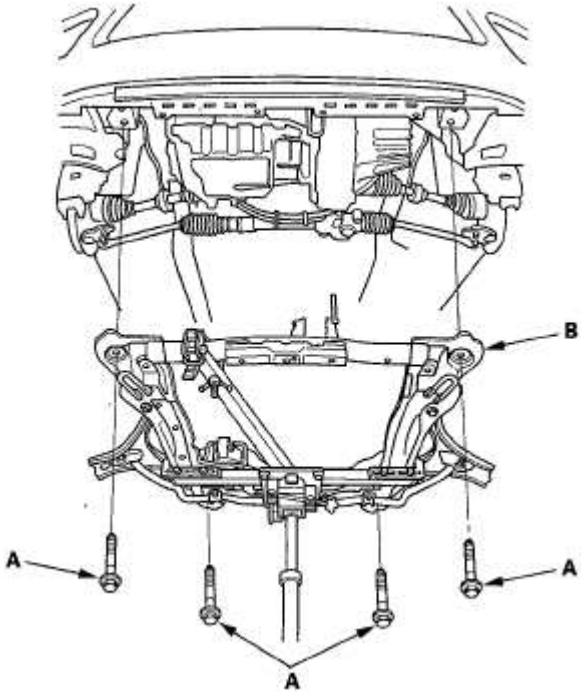


Fig. 44: Identifying Front Subframe Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Pry out the driveshafts inboard joint (see step 8 on **DRIVESHAFT REMOVAL**).
34. Remove the intermediate shaft (see **INTERMEDIATE SHAFT REMOVAL**).
35. Remove the clutch cover.

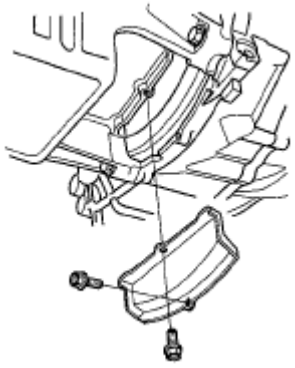


Fig. 45: Identifying Clutch Cover And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Support the transmission with the transmission jack.
37. Remove the transmission mounting bolts.

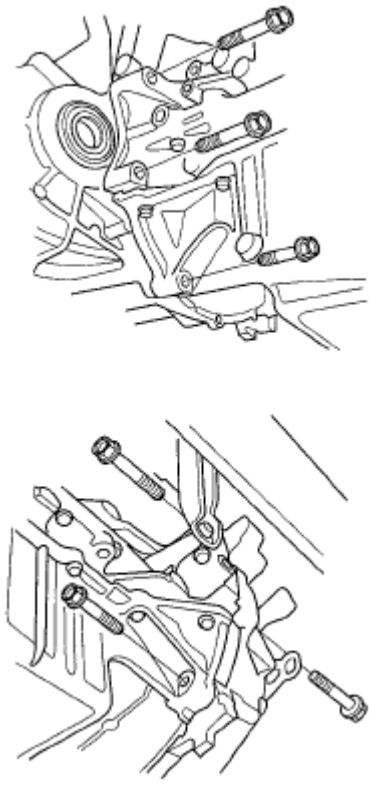


Fig. 46: Identifying Transmission Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

38. Pull the transmission away from the engine until the transmission mainshaft clears the clutch pressure plate.
39. Slowly lower the transmission about 150 mm (6 in). Check once again that all hoses and electrical wiring are disconnected and free from the transmission, then lower it all the way.
40. Remove the release fork boot (A) from the clutch housing (B).

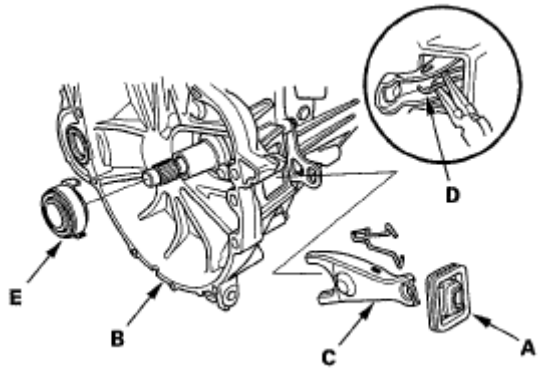


Fig. 47: Identifying Release Fork Boot From Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

41. Remove the release fork (C) from the clutch housing by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).

TRANSMISSION INSTALLATION

Special Tools Required

- Engine hanger/adapter VSB02C000015
- Engine support hanger, A & Reds AAR-T-12566
- Front subframe adapter VSB02C000016
- 2006 Civic engine hanger VSB02C000025

These special tools are available through the Honda Tool and Equipment Program 1-888-424-6857

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Loosen the upper torque rod mounting bolt (A).

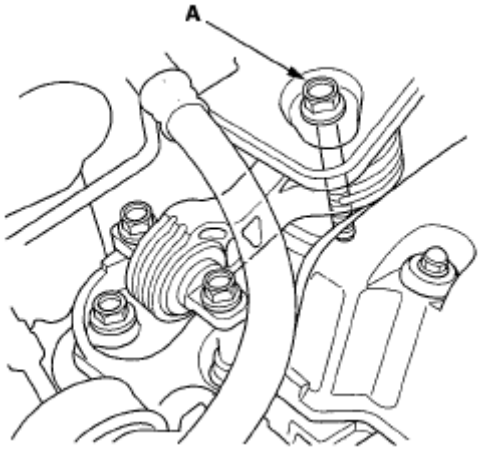


Fig. 48: Identifying Upper Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Make sure the two dowel pins (A) are installed in the clutch housing.

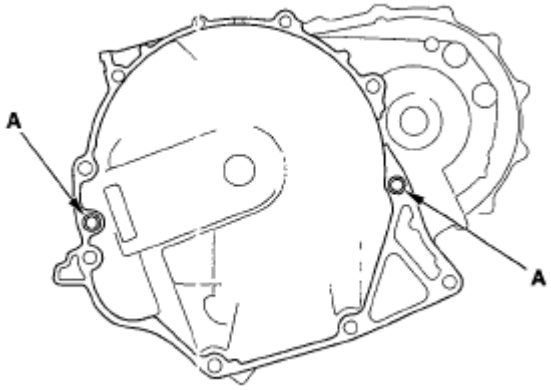


Fig. 49: Identifying Dowel Pins In Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the release fork and the release bearing (see step 35 on **PRESSURE PLATE AND CLUTCH DISC REMOVAL (6-SPEED MODEL)**), then install the release fork boot (see step 37 on page **PRESSURE PLATE AND CLUTCH DISC REMOVAL (6-SPEED MODEL)**).
4. Place the transmission on the transmission jack, and raise it to the engine level.
5. Install the transmission mounting bolts.

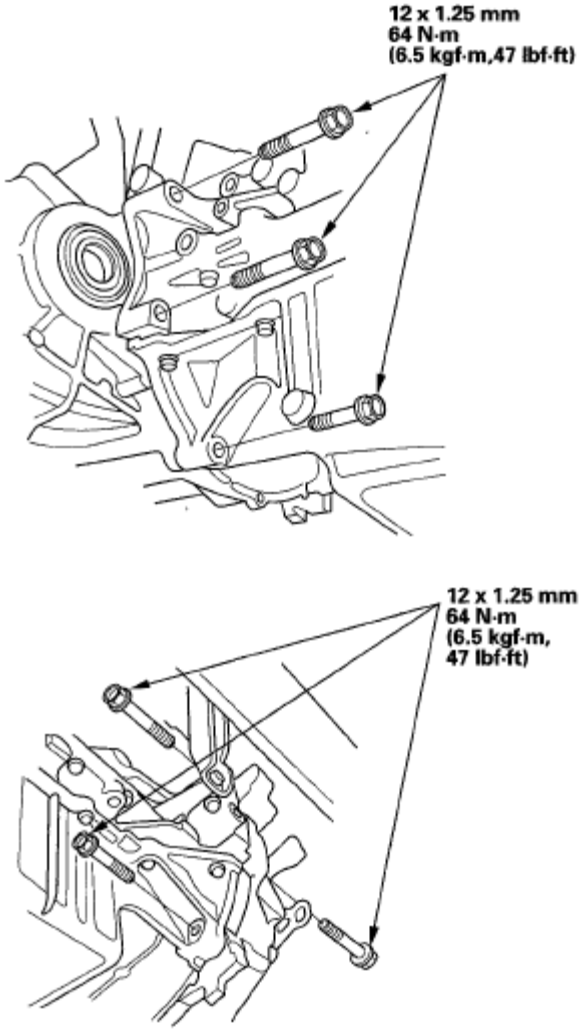


Fig. 50: Identifying Transmission Mounting Bolts w/Torque Spec. Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the clutch cover.

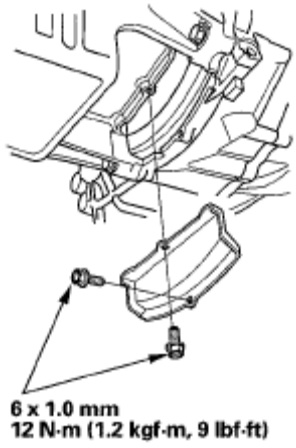


Fig. 51: Identifying Clutch Cover And Bolts w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the intermediate shaft (see **INTERMEDIATE SHAFT INSTALLATION**).
8. Install the driveshafts inboard joint (see **DRIVESHAFT INSTALLATION**).
9. Support the front subframe with the front subframe adapter and a jack.

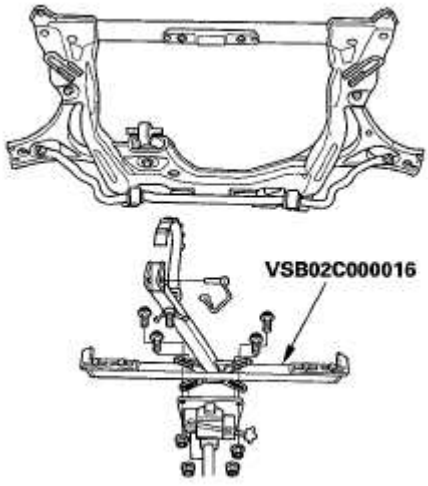


Fig. 52: Supporting Front Subframe With Front Subframe Adapter And Jack
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the front subframe (A). Loosely install the new subframe mounting bolts (B).

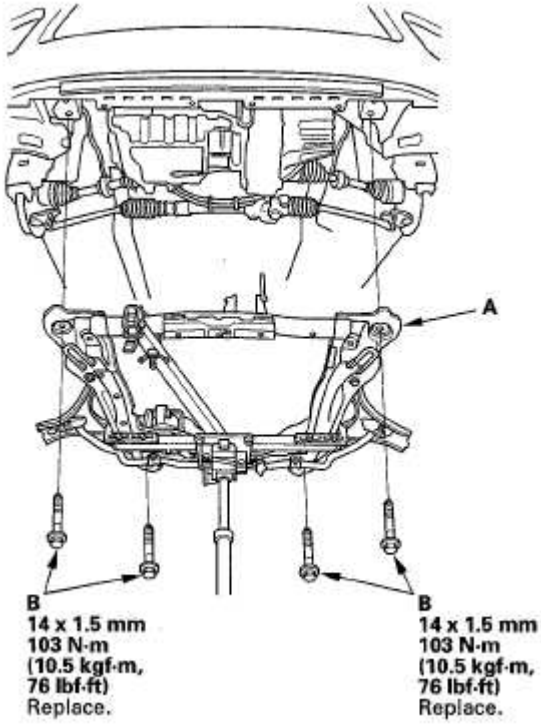


Fig. 53: Identifying Front Subframe And Subframe Mounting Bolts w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Align the front subframe reference marks (A) to the body (B), as noted during removal. Tighten the subframe mounting bolts to the specified torque.

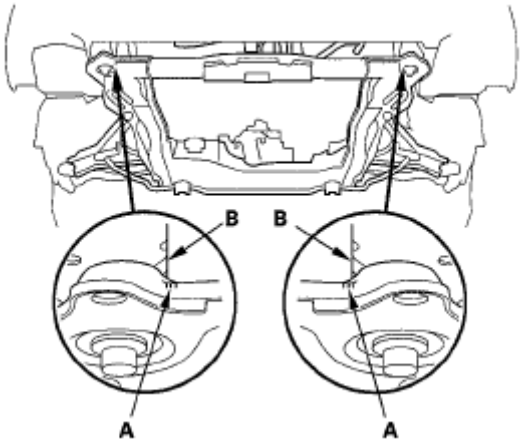


Fig. 54: Identifying Front Subframe Reference Marks To Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the lower torque rod mounting bolt.

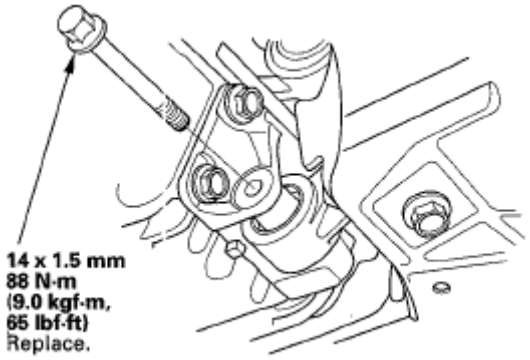


Fig. 55: Identifying Lower Torque Rod Mounting Bolt w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the front engine mount bracket (A) on the transmission and engine.

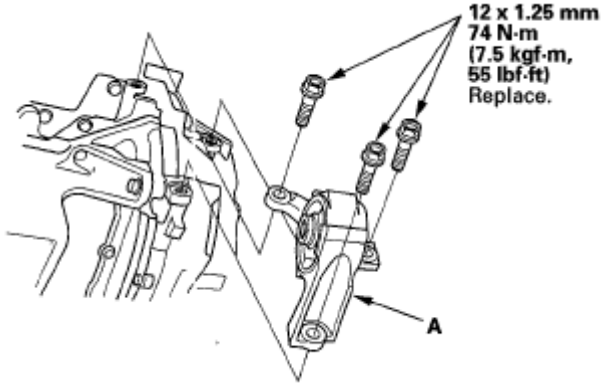


Fig. 56: Identifying Front Engine Mount Bracket w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Loose tighten the new front mount mounting bolt (A). Then attach the lower radiator hose to the front engine mount bracket.

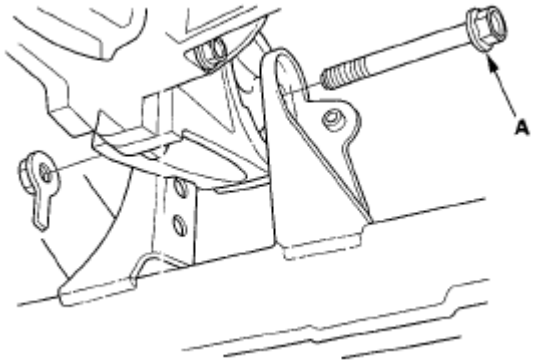


Fig. 57: Identifying Front Mount Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the middle subframe mounting bolts.

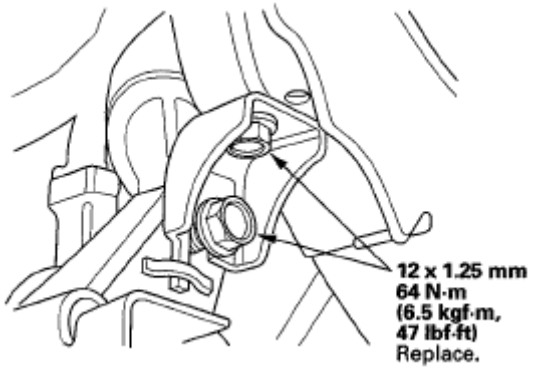


Fig. 58: Identifying Middle Subframe Mounting Bolts w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the steering gearbox stiffner plate (A) and harness clip (B).

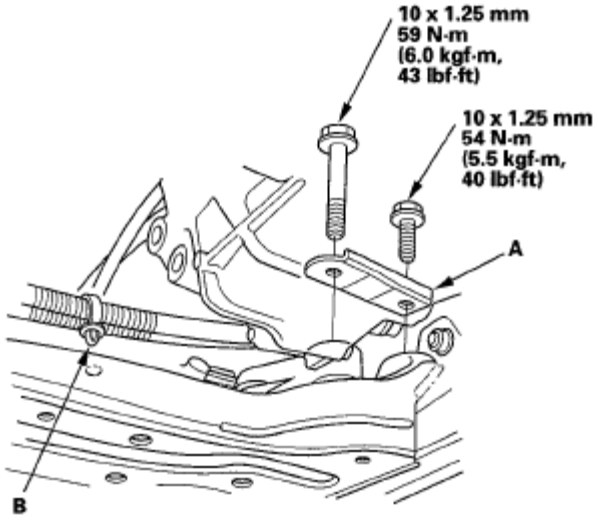


Fig. 59: Identifying Steering Gearbox Stiffner Plate And Harness Clip w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Install the stiffner plate (A) and mounting bracket (B). Connect the exhaust mounting rubber (C).

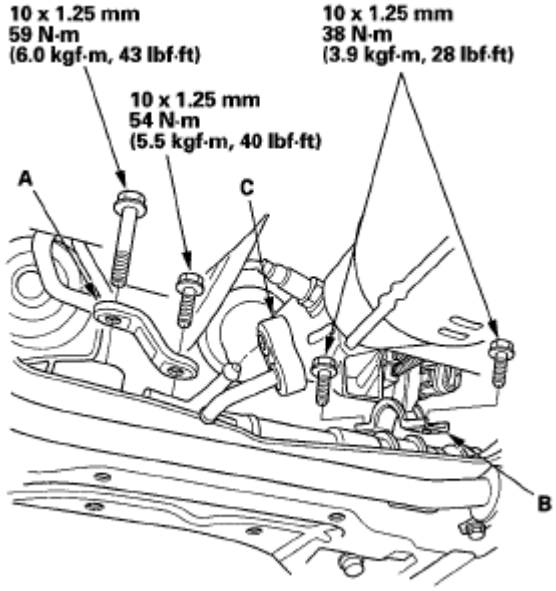


Fig. 60: Identifying Stiffner Plate And Mounting Bracket w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Connect the lower arm (see step 7 on **DRIVESHAFT INSTALLATION**).

19. Lower the vehicle on the lift.
20. Install the transmission mount bracket (A) and connect the ground cable (B).

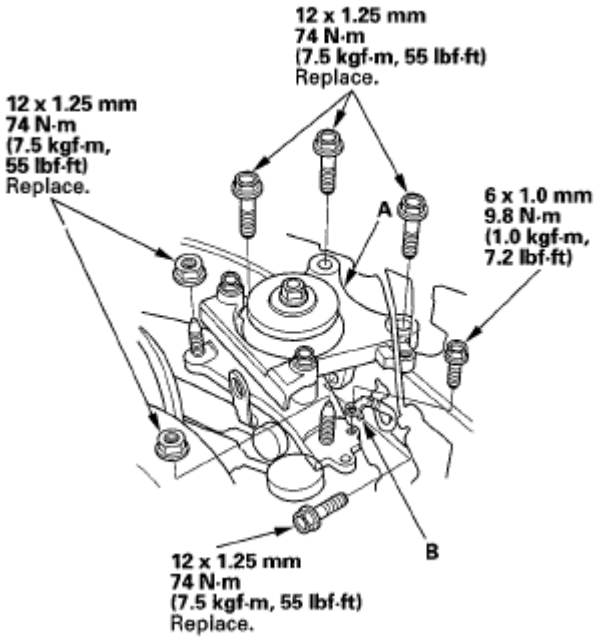


Fig. 61: Identifying Transmission Mount Bracket And Ground Cable w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Raise the vehicle on the lift.
22. Loosen and retighten the lower torque rod mounting bolt.

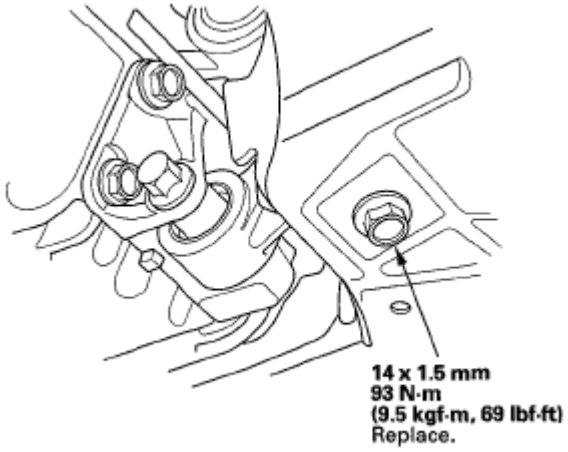


Fig. 62: Identifying Lower Torque Rod Mounting Bolt w/Torque Spec.

Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Lower the vehicle on the lift.
24. Tighten the upper torque rod mounting bolt.

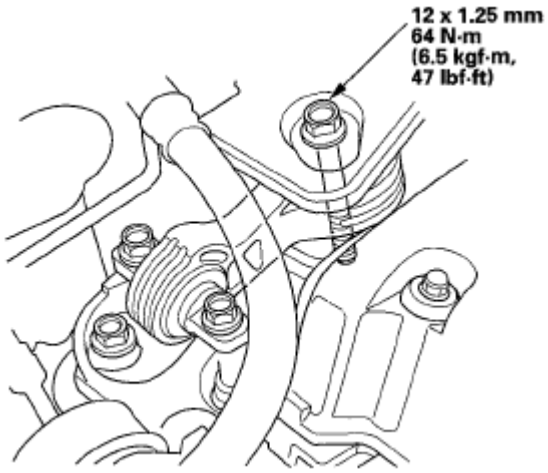


Fig. 63: Identifying Upper Torque Rod Mounting Bolt w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Raise the vehicle on the lift.
26. Tighten the front mount mounting bolt.

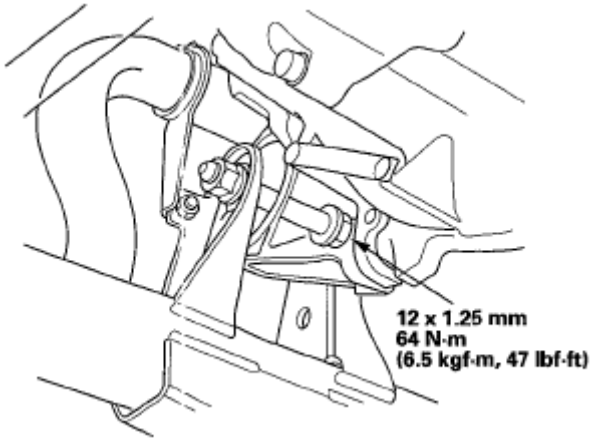


Fig. 64: Identifying Front Mount Mounting Bolt w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Refill the transmission with the recommended transmission fluid (see

TRANSMISSION FLUID INSPECTION AND REPLACEMENT).

28. Install the splash shield.

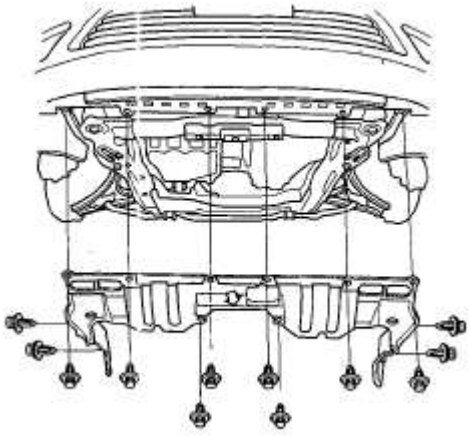


Fig. 65: Identifying Splash Shield And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Lower the vehicle on the lift.
30. Remove the engine hanger and the hanger/adapter from the engine.
31. Install the engine control module (ECM) bracket (A), then install the clutch line clamp (B).

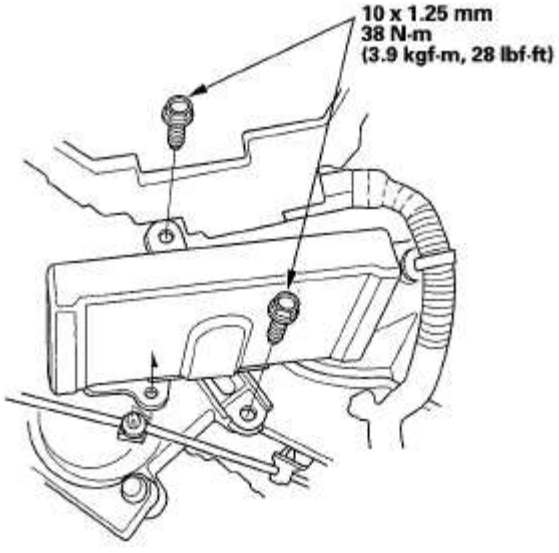


Fig. 66: Identifying Engine Control Module (ECM) Bracket And Clutch Line Clamp w/Torque Spec.

Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Install the under-food fuse/relay box (A) on the under-hood fuse/relay bracket.

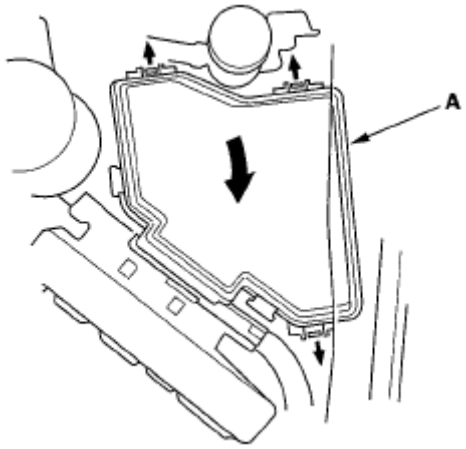


Fig. 67: Identifying Under-Food Fuse/Relay Box On Under-Hood Fuse/Relay Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Install the two upper transmission mounting bolts.

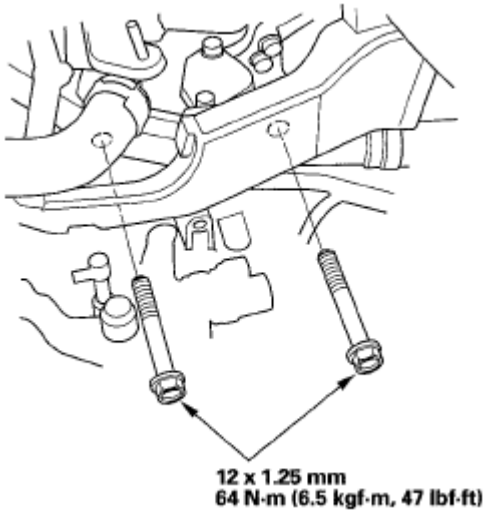


Fig. 68: Identifying Upper Transmission Mounting Bolts w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Install the engine harness cover (A).

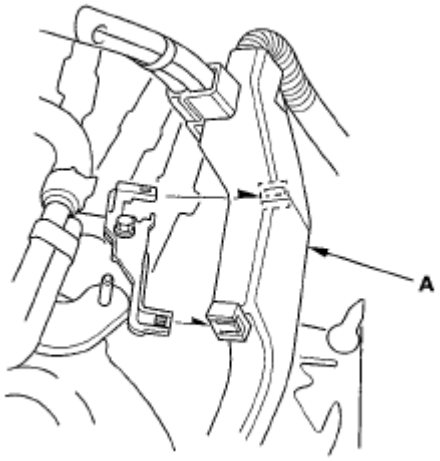


Fig. 69: Identifying Engine Harness Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Install the air cleaner housing mounting bracket.

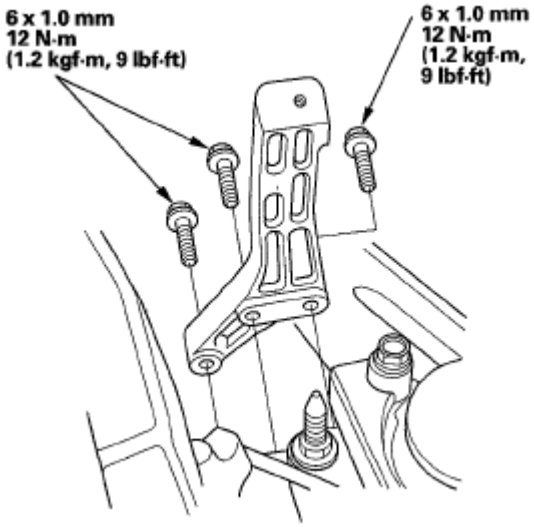


Fig. 70: Identifying Air Cleaner Housing Mounting Bracket w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Install the harness clips (A) on the shift cable bracket (B) and harness bracket (C).

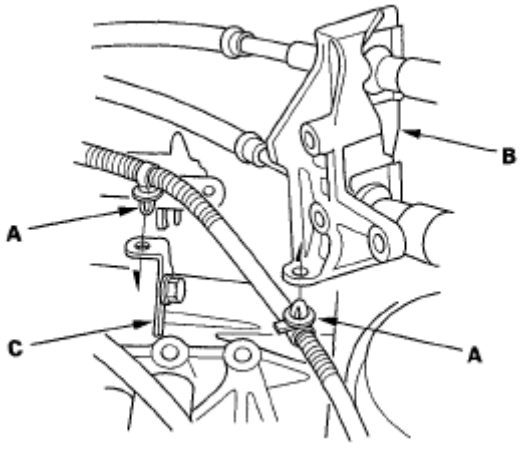


Fig. 71: Identifying Shift Cable Bracket And Harness Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

37. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the shift cable ends (A).

'06 model

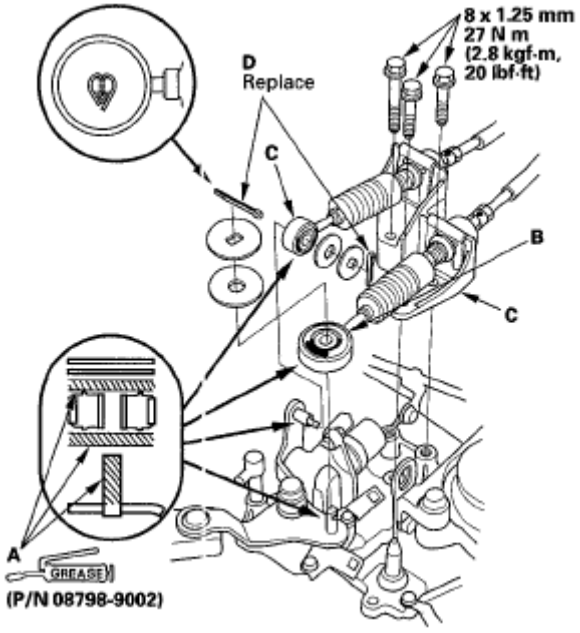


Fig. 72: Identifying Shift Cable Ends And Shift Cable Bracket w/Torque Spec. (06 Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

'07-08 models

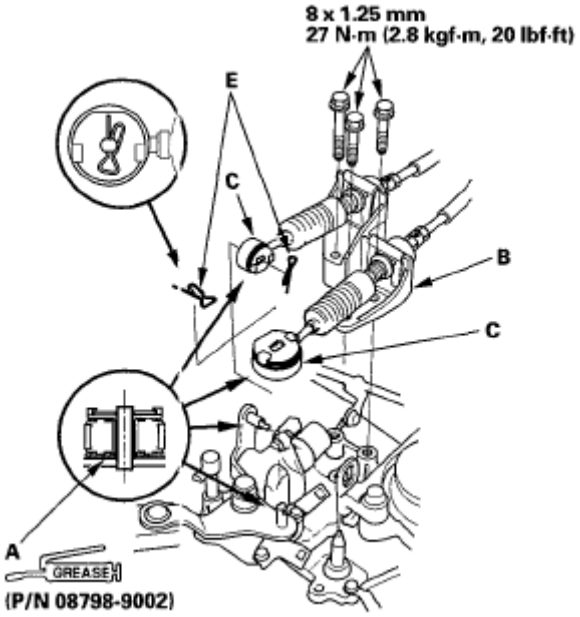


Fig. 73: Identifying Shift Cable Ends And Shift Cable Bracket w/Torque Spec.(07-08 Models)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

38. Install the shift cable bracket (B) and the shift cables (C), then install the new cotter pins (D) and lock pins (E).
39. Connect the back-up light switch connector (A), and the output shaft (countershaft) speed sensor connector (B), and the reverse lockout solenoid connector (C). Install the harness clips (D).

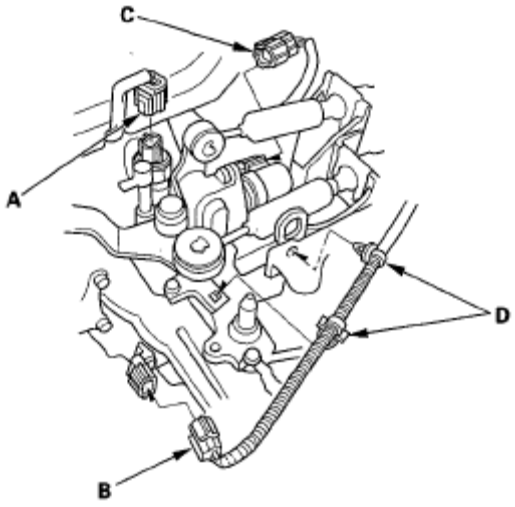


Fig. 74: Identifying Back-Up Light Switch Connector And Countershaft Speed Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

40. Apply super high temp urea grease (P/N 08798-9002) to the end of the slave cylinder rod. Install the slave cylinder (A) then install the clutch line bracket (B). Be careful not to bend the clutch line.

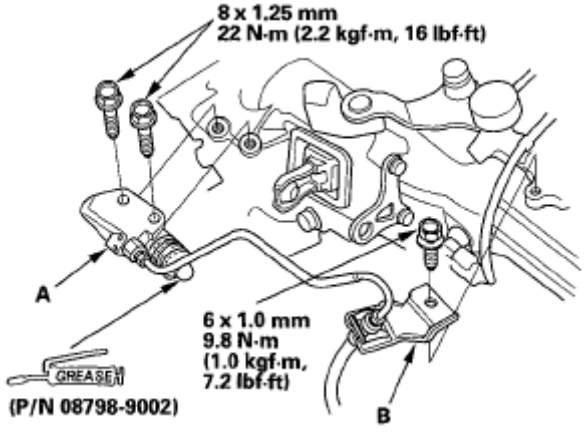


Fig. 75: Identifying Slave Cylinder And Clutch Line Bracket w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

41. Install the battery base (A) with the coolant reservoir (B).

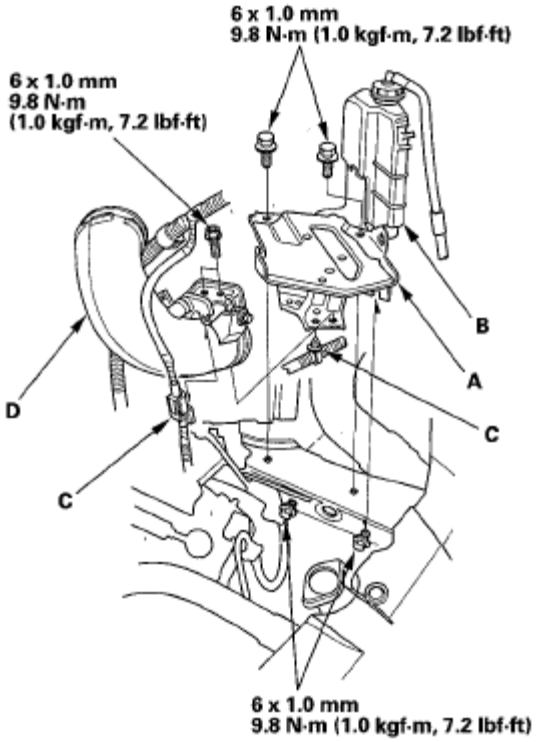


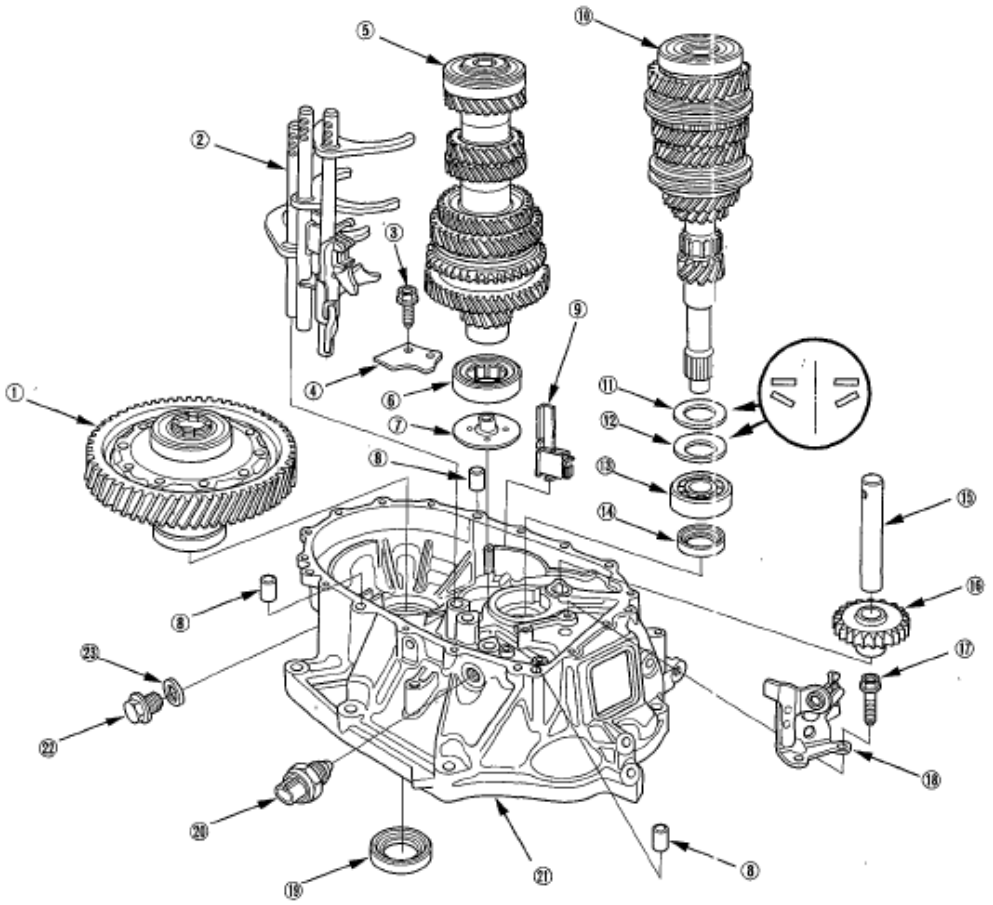
Fig. 76: Identifying Battery Base With Coolant Reservoir w/Torque Specs. Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. Install the harness clips (C) and the intake air duct (D).
43. Install the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
44. Install the battery. Clean the battery posts and cable terminals. Connect the positive cable to the battery, then connect the negative cable, and apply multipurpose grease to prevent corrosion.
45. Install the under-cowl panel and cowl cover (see **COWL COVER REPLACEMENT**).
46. Check the change lever and the clutch operation.
47. Check the front wheel alignment (see **WHEEL ALIGNMENT**).
48. Test-drive the vehicle.
49. Enter the anti-theft code for the audio system or the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).
50. Do the power window control unit reset procedure (see **RESETTING THE**

POWER WINDOW CONTROL UNIT).

TRANSMISSION DISASSEMBLY

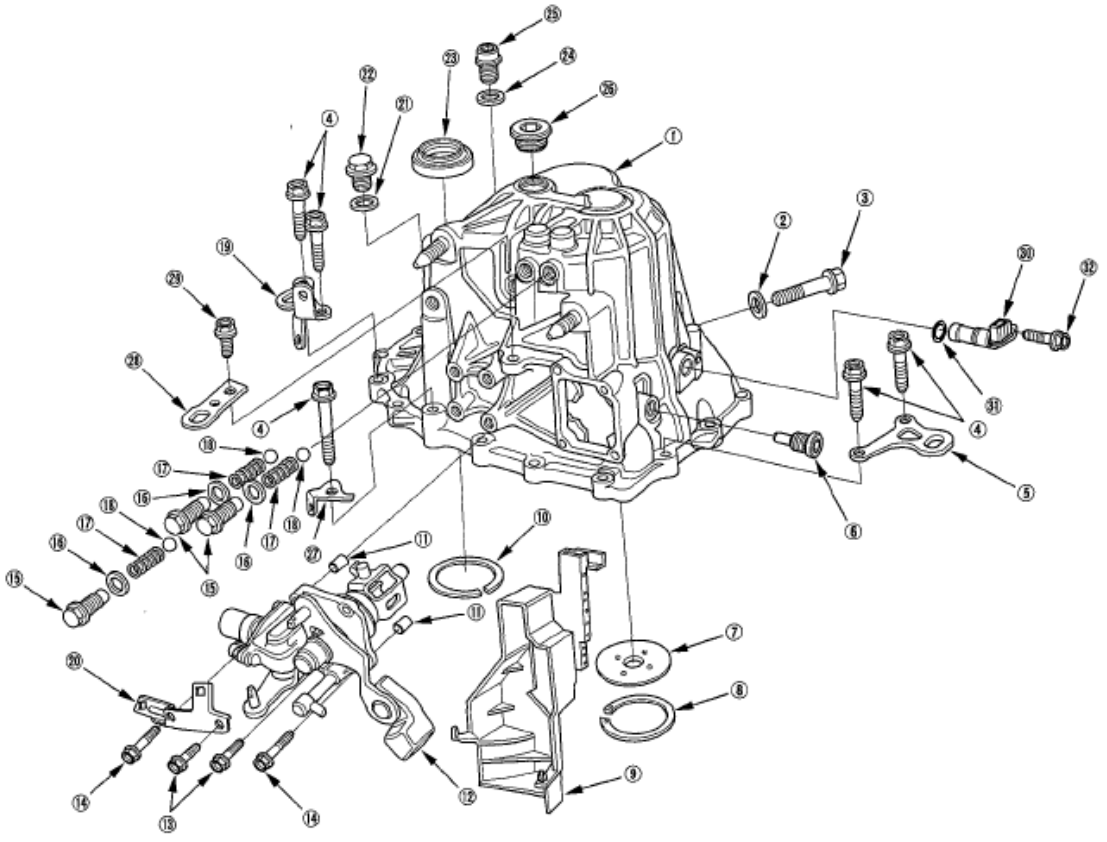
Exploded View-Clutch Housing



① DIFFERENTIAL ASSEMBLY
② SHIFT FORK
③ 6 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
④ BEARING SET PLATE
⑤ COUNTERSHAFT ASSEMBLY
⑥ NEEDLE BEARING
⑦ OIL GUIDE PLATE C
⑧ 14 x 20 mm DOWEL PIN
⑨ MAGNET
⑩ MAINSHAFT ASSEMBLY
⑪ 28 mm WASHER
⑫ 28 mm SPRING WASHER
⑬ BALL BEARING
⑭ 28 x 43 x 7 mm OIL SEAL
Replace.
⑮ REVERSE GEAR SHAFT
⑯ REVERSE IDLER GEAR
⑰ 6 mm SPECIAL BOLT
15 N·m (1.5 kgf·m, 11 lbf·ft)
⑱ REVERSE SHIFT FORK
⑲ 35 x 58 x 8 mm OIL SEAL
Replace.
⑳ BACK-UP LIGHT SWITCH
29 N·m (3.0 kgf·m, 22 lbf·ft)
㉑ CLUTCH HOUSING
㉒ 20 mm BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉓ 20 mm WASHER
Replace.

Fig. 77: Exploded View Of Clutch Housing Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Exploded View-Transmission Housing



① TRANSMISSION HOUSING
② 10 mm WASHER
Replace.
③ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
④ 8 mm FLANGE BOLT
27 N·m (2.8 kgf·m, 20 lbf·ft)
⑤ TRANSMISSION HANGER A
⑥ INTERLOCK BOLT
39 N·m (4.0 kgf·m, 29 lbf·ft)
⑦ OIL GUIDE PLATE M
⑧ 72 mm SHIM
⑨ OIL GUTTER PLATE
⑩ 80 mm SHIM
⑪ 8 x 14 mm DOWEL PIN
⑫ CHANGE LEVER ASSEMBLY
⑬ 6 x 30 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
⑭ 6 x 20 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
⑮ DETENT BOLT
22 N·m (2.2 kgf·m, 16 lbf·ft)
⑯ 12 mm WASHER
Replace.
⑰ SPRING
⑱ STEEL BALL
⑲ TRANSMISSION HANGER B
⑳ HARNESS BRACKET A
㉑ 20 mm SEALING WASHER
Replace.
㉒ FILLER PLUG
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉓ 40 x 56 x 8 mm OIL SEAL
Replace.
㉔ 14 mm SEALING WASHER
Replace.
㉕ DRAIN PLUG
39 N·m (4.0 kgf·m, 29 lbf·ft)
㉖ 32 mm SEALING CAP
34 N·m (3.5 kgf·m, 25 lbf·ft)
㉗ HARNESS BRACKET B
㉘ TRANSMISSION HANGER
㉙ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉚ OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR
㉛ O-RING
Replace.
㉜ 6 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)

Fig. 78: Exploded View Of Transmission Housing Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

1. Remove the detent bolts (A), 12 mm washers (B) springs, steel balls, and the back-up light switch (C). Then remove the transmission hanger (D).

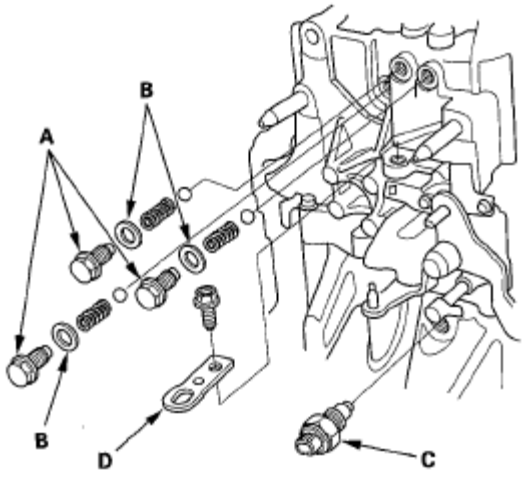


Fig. 79: Identifying Back-Up Light Switch With Bolts And Washers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the 20 mm bolt (A) and the 20 mm washer (B).

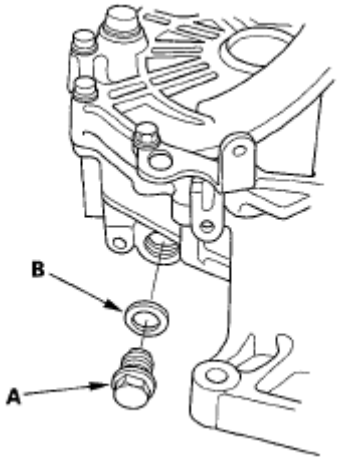


Fig. 80: Identifying Bolts And Washers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the interlock bolt (B), change lever assembly (C), 8 x 14 mm dowel pins (D), and harness bracket A.

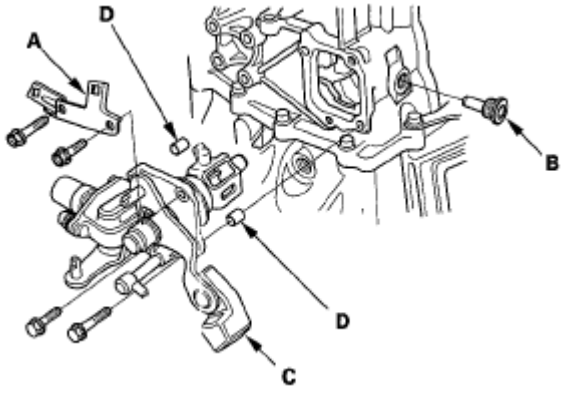


Fig. 81: Identifying Change Lever Assembly And Interlock Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the drain plug (A), the 14 mm sealing washer (B), the filler plug (C), 20 mm sealing washer (D), the 10 mm flange bolt (E), 10 mm washer (F), the output shaft (countershaft) speed sensor (G), and the O-ring (H).

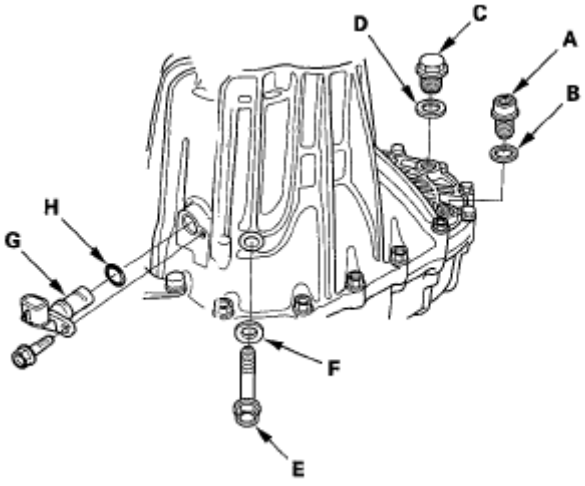


Fig. 82: Identifying Drain Plug And Sealing Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the transmission hanger A, the transmission hanger B, and the harness bracket (C).

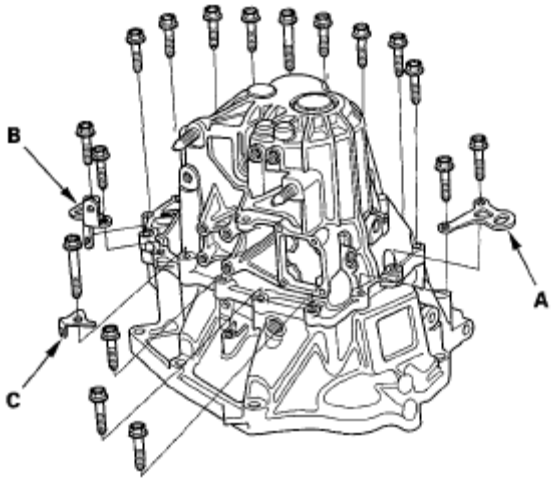


Fig. 83: Identifying Transmission Hanger And Harness Bracket With Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the 8 mm flange bolts in a crisscross pattern in several steps.
7. Remove the 32 mm sealing cap (A).

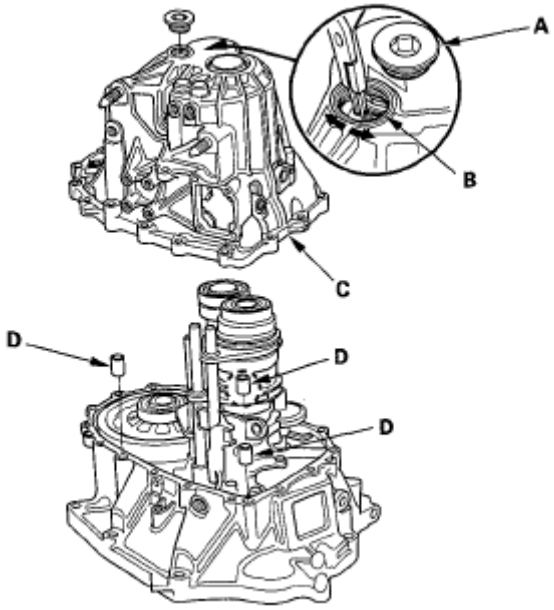


Fig. 84: Identifying Sealing Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Expand the 72 mm snap ring (B) on the countershaft ball bearing, and remove

it from the groove using a pair of snap ring pliers.

9. Remove the transmission housing (C) and the three 14 x 20 mm dowel pins (D).
10. Remove the reverse idler gear (A) and the reverse gear shaft (B).

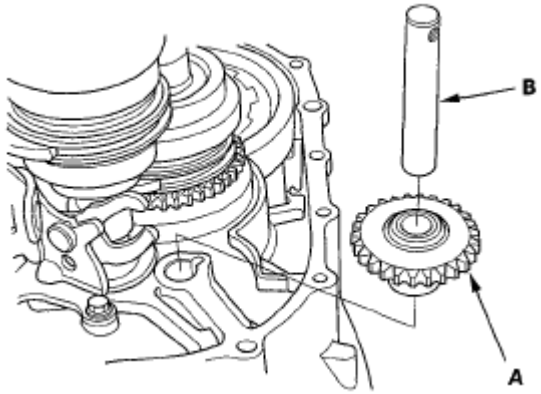


Fig. 85: Identifying Reverse Idler Gear And Reverse Gear Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the reverse shift fork.

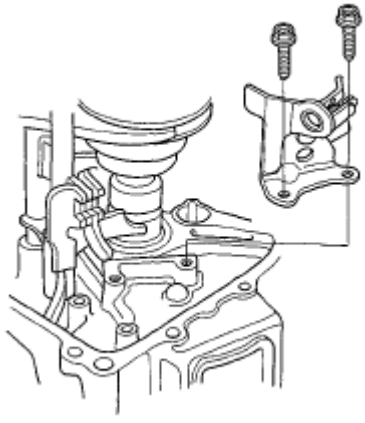


Fig. 86: Identifying Reverse Shift Fork And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Apply tape to the mainshaft splines to protect the seal, then remove the mainshaft assembly (A) and countershaft assembly (B) with the shift forks (C) from the clutch housing (D).

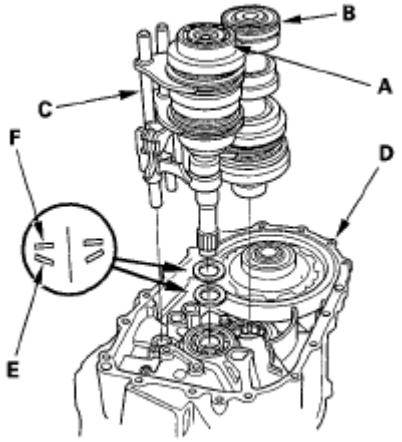


Fig. 87: Identifying Mainshaft Assembly, Countershaft Assembly. Shift Forks And Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the 28 mm spring washer (E) and 28 mm washer (F).
14. Remove the differential assembly (A) and the magnet (B).

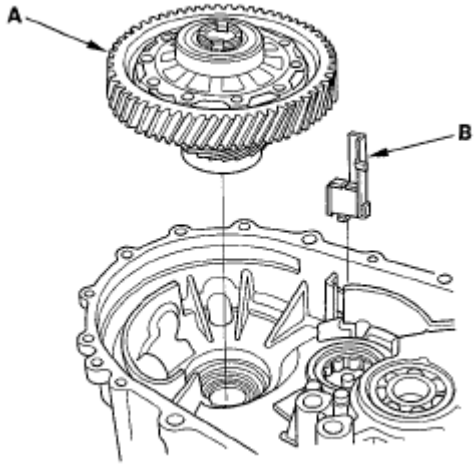


Fig. 88: Identifying Differential Assembly And Magnet
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the oil gutter plate (A), the oil guide plate M, and the 72 mm shim (B).

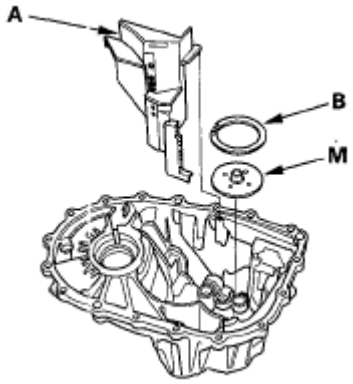


Fig. 89: Identifying Oil Gutter Plate And Shim
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REVERSE SHIFT FORK CLEARANCE INSPECTION

1. Measure the clearance between the reverse idler gear (A) and the reverse shift fork (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 2.

   Standard: 0.20-0.59 mm (0.007-0.024 in.) Service Limit: 1.3 mm (0.051 in.)

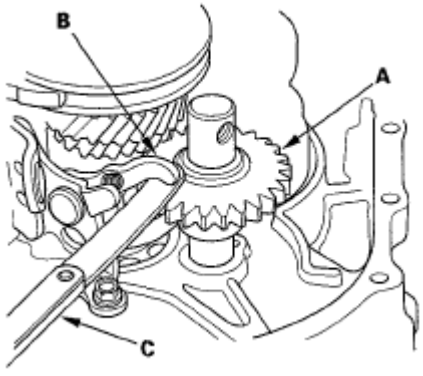


Fig. 90: Identifying Reverse Idler Gear, Reverse Shift Fork And Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the width of the reverse shift fork.
   - If the width is not within the standard, replace the reverse shift fork.
   - If the width is within the standard, replace reverse idler gear.

Standard: 13.4-13.7 mm (0.527-0.539 in.)

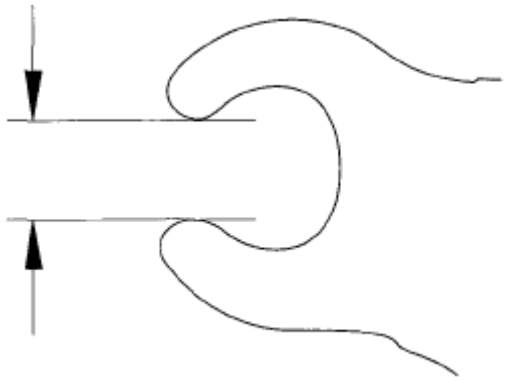


Fig. 91: Identifying Width Of Reverse Shift Fork
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CHANGE LEVER CLEARANCE INSPECTION

1. Measure the clearance between the change lever (A) and the select lever (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 2.

   Standard: 0.05-0.25 mm (0.002-0.010 in.) Service Limit: 0.50 mm (0.020 in.)

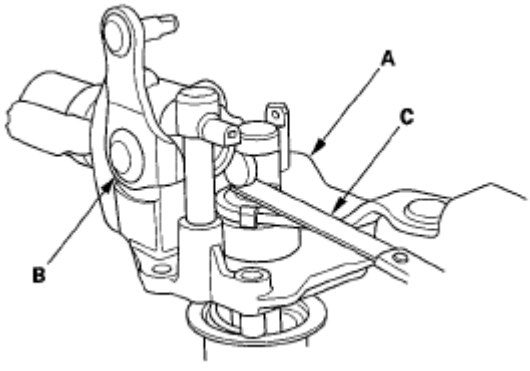


Fig. 92: Identifying Lever, Select Lever And Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the groove of the change lever.
   - If the groove is not within the standard, replace the shift lever.

- If the groove is within the standard, replace the select lever.

Standard: 15.00-15.10 mm (0.591-0.594 in.)

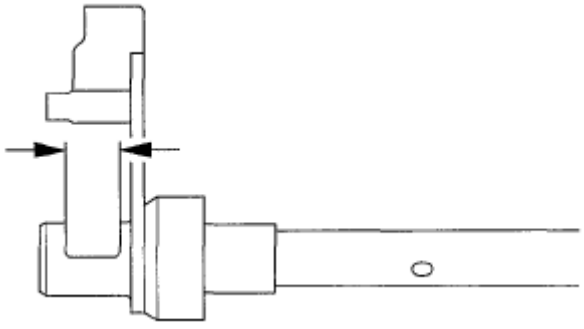


Fig. 93: Identifying Groove Of Change Lever
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY

NOTE:

- **If 5 minutes have passed after applying liquid gasket, reapply it, and assemble the shift arm cover.**
- **Prior to reassembling, clean all parts in solvent, dry them, and apply grease to the contact surfaces as shown.**

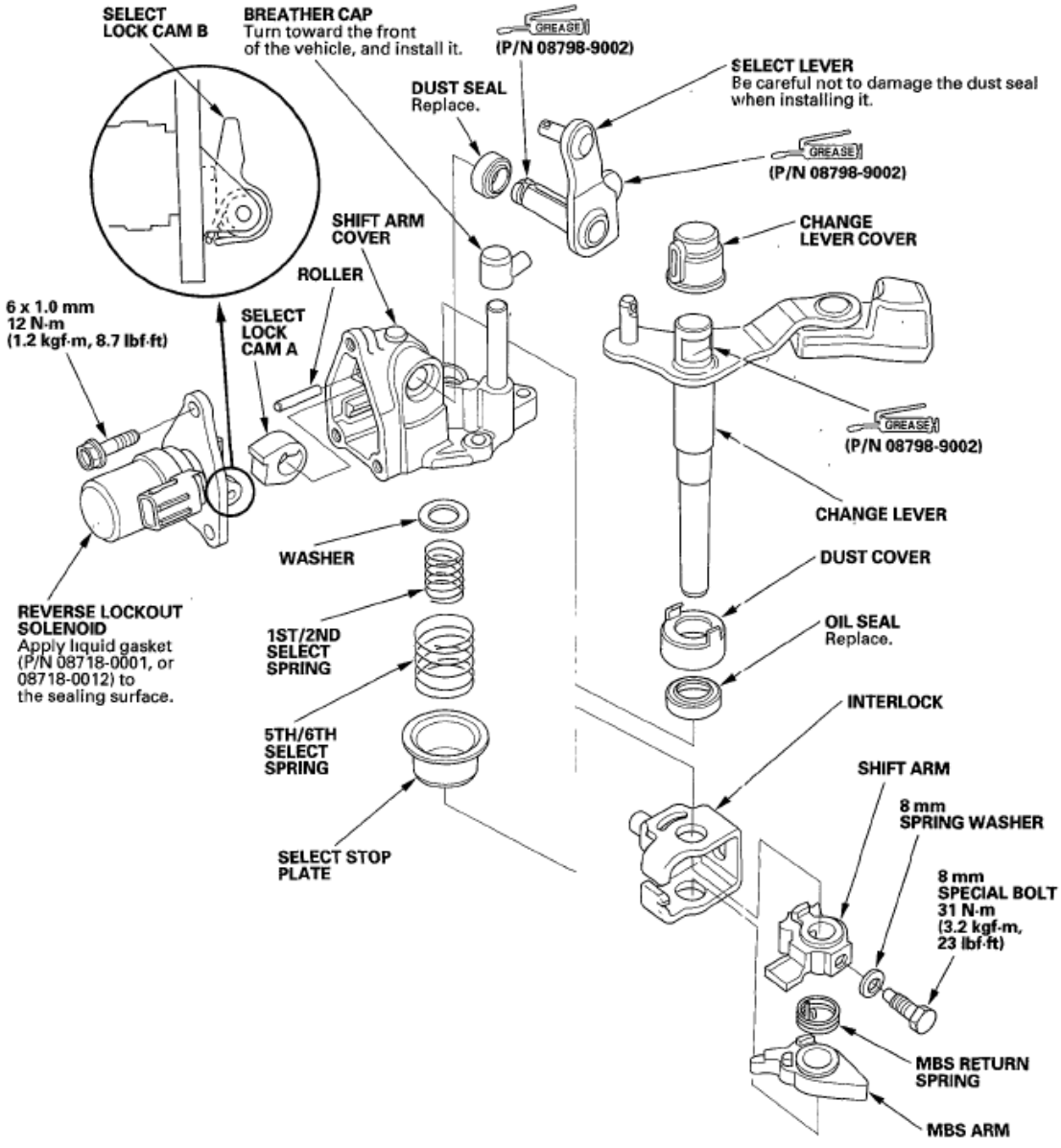


Fig. 94: Exploded View Of Change Lever Assembly & Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SHIFT FORK CLEARANCE INSPECTION

NOTE: The synchro sleeve and synchro hub should be replaced as a set.

1. Measure the clearance between each shift fork (A) and its matching synchro

sleeve (B). If the clearance exceeds the service limit, go to step 2.

Standard: 0.35-0.65 mm (0.014-0.026 in.) Service Limit: 1.0 mm (0.039 in.)

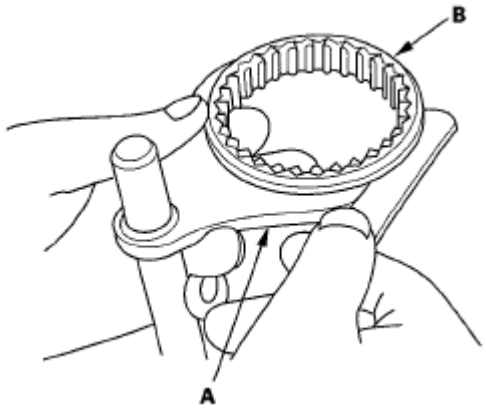


Fig. 95: Identifying Shift Fork And Synchro Sleeve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the thickness of the shift fork fingers.
   - If the thickness is not within the standard, replace the shift fork.
   - If the thickness is within the standard, replace the synchro sleeve and synchro hub as a set.
   - If one arm of the shift fork shows more wear than others, the fork may be bent and needs to be replaced.

Standard: 7.4-7.6 mm (0.29-0.30 in.)

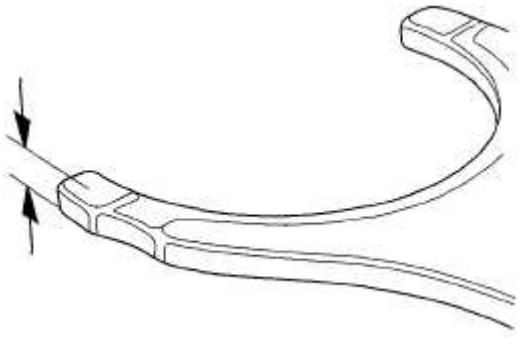


Fig. 96: Identifying Thickness Of Shift Fork Fingers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Measure the clearance between the shift fork (A) and the shift arm (B). If the clearance exceeds the service limit, go to step 4.

   Standard: 0.2-0.5 mm (0.007-0.020 in.) Service Limit: 0.62 mm (0.024 in.)

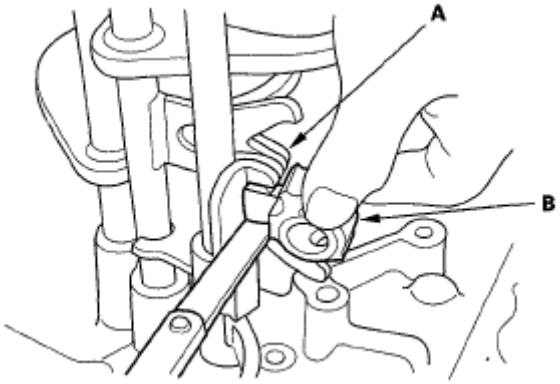


Fig. 97: Identifying Shift Fork And Shift Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the width of the shift arm.
   - If the width is not within the standard, replace the shift arm.
   - If the width is within the standard, replace the shift fork or reverse shift piece.

   Standard: 16.9-17.0 mm (0.665-0.669 in.)

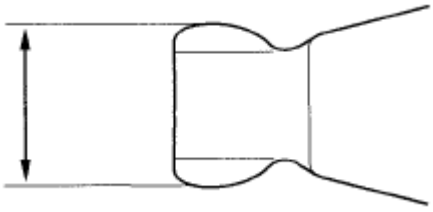


Fig. 98: Identifying Width Of Shift Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SHIFT FORK DISASSEMBLY/REASSEMBLY

NOTE: Prior to reassembling, clean all the parts in solvent, dry them, and apply manual transmission fluid (MTF) to all

contact surfaces.

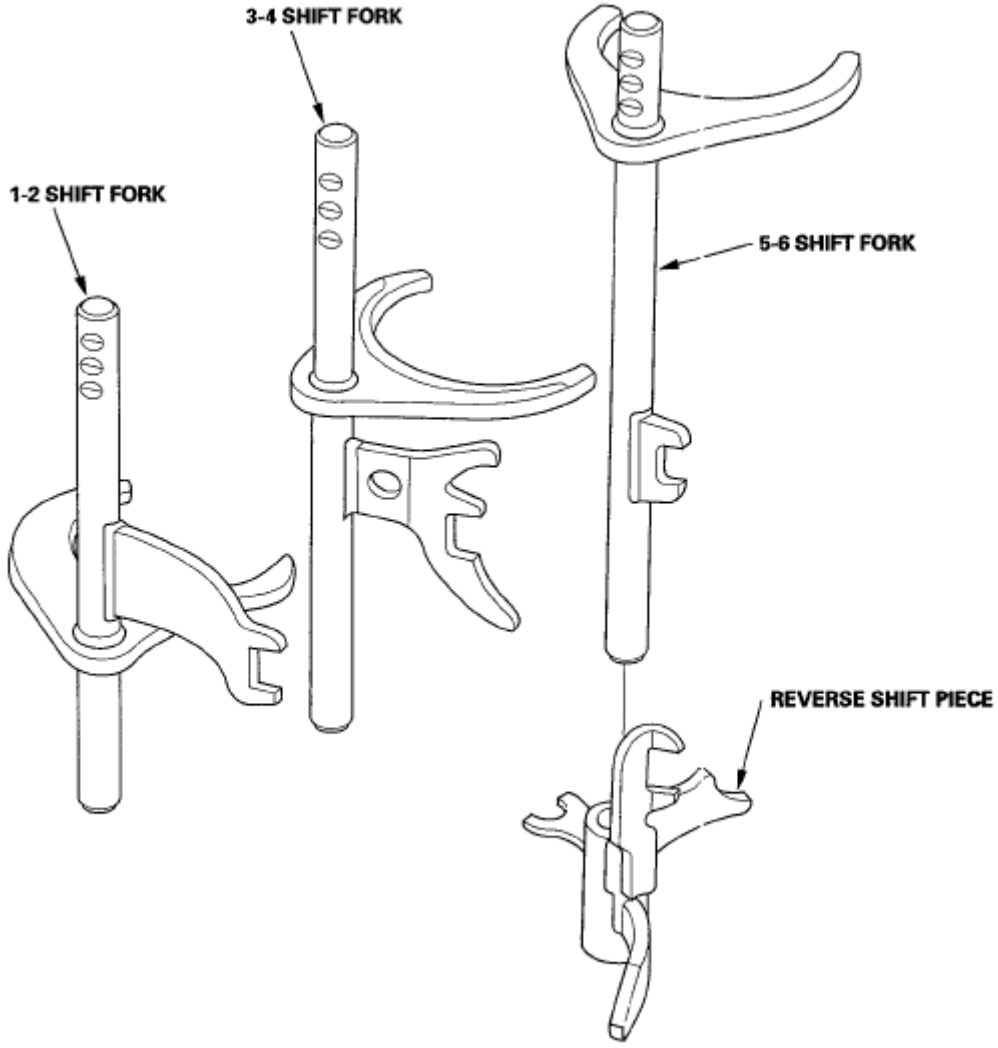


Fig. 99: Exploded View Of Shift Fork
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT ASSEMBLY CLEARANCE INSPECTION

NOTE: If replacement is required, always replace the synchro sleeve and synchro hub as a set.

1. Support the bearing inner race with an appropriate sized socket (A), and push down on the mainshaft (B).

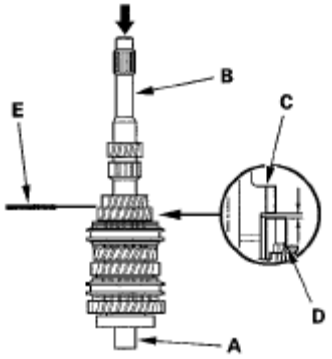


Fig. 100: Identifying Socket And Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the clearance between 2nd gear (C) and 3rd gear (D) with a feeler gauge (E).
   - If the clearance is more than the service limit, go to step 3.
   - If the clearance is within the service limit, go to step 4.

   Standard: 0.06-0.16 mm (0.002-0.006 in.) Service Limit: 0.25 mm (0.010 in.)

3. Measure the thickness of 3rd gear.
   - If the thickness is less than the service limit, replace 3rd gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and 3rd/4th synchro sleeve as a set.

   Standard: 23.92-23.97 mm (0.941-0.944 in.) Service Limit: 23.80 mm (0.937 in.)

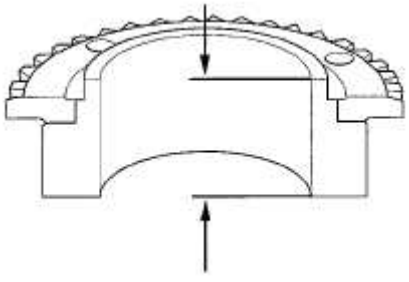


Fig. 101: Identifying Thickness Of 3rd Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the clearance between 4th gear (A) and the distance collar (B) with a dial indicator (C).
   - If the clearance is more than the service limit, go to step 5.
   - If the clearance is within the service limit, go to step 7.

   Standard: 0.06-0.16 mm (0.002-0.006 in.) Service Limit: 0.25 mm (0.010 in.)

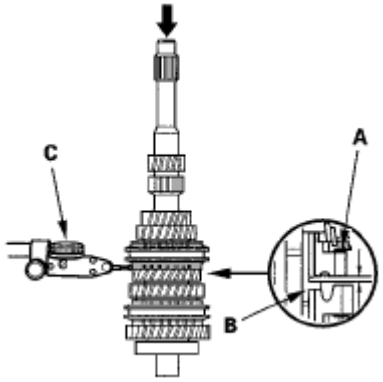


Fig. 102: Identifying 4th Gear, Distance Collar And Dial Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the length (1) of the distance collar as shown.
   - If the length (1) is not within the standard, replace the distance collar.
   - If the length (1) is within the standard, go to step 6.

   Standard: 24.03-24.08 mm (0.946-0.948 in.)

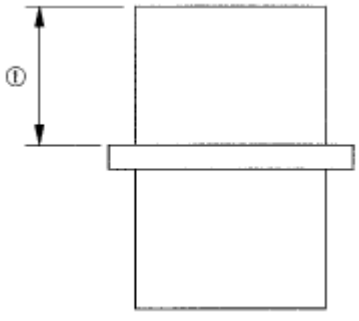


Fig. 103: Identifying Length Of Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Measure the thickness of 4th gear.
   - If the thickness is less than the service limit, replace 4th gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and 3rd/4th synchro sleeve as a set.

   Standard: 23.92-23.97 mm (0.941-0.944 in.) Service Limit: 23.80 mm (0.937 in.)

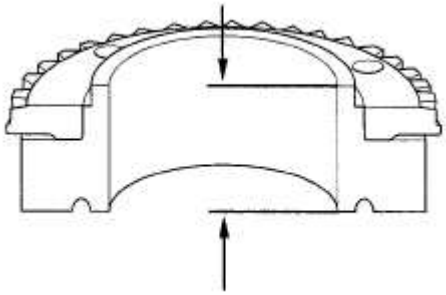


Fig. 104: Identifying Thickness Of 4th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Measure the clearance between the distance collar (A) and 5th gear (B) with a dial indicator (C).
   - If the clearance is more than the service limit, go to step 8.
   - If the clearance is within the service limit, go to step 10.

   Standard: 0.06-0.16 mm (0.002-0.006 in.) Service Limit: 0.25 mm (0.010 in.)

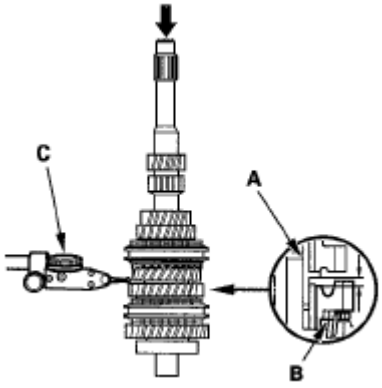


Fig. 105: Identifying Distance Collar, 5th Gear And Dial Indicator

Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Measure the length (2) of the distance collar as shown.
   - If the length (2) is not within the standard, replace the distance collar.
   - If the length (2) is within the standard, go to step 9.

Standard: 24.03-24.08 mm (0.946-0.948 in.)

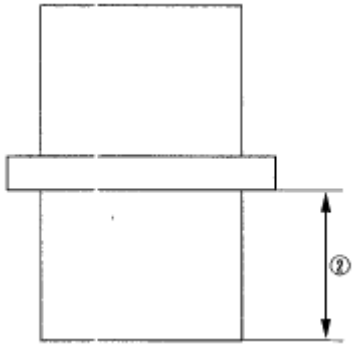


Fig. 106: Identifying Length Of Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Measure the thickness of 5th gear.
   - If the thickness is less than the service limit, replace 5th gear.
   - If the thickness, is within the service limit, replace the 5th/6th synchro hub and 5th/6th synchro sleeve as a set.

Standard: 23.92-23.97 mm (0.941-0.944 in.) Service Limit: 23.80 mm (0.937 in.)

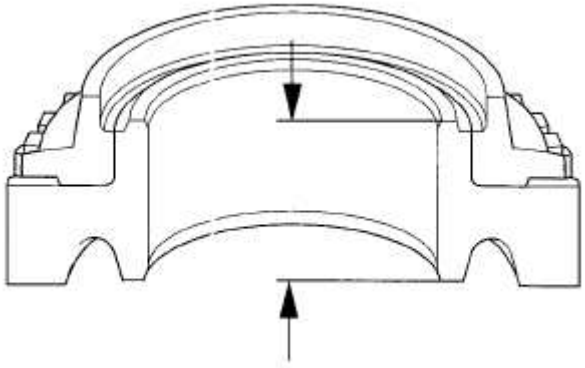


Fig. 107: Identifying Thickness Of 5th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Measure the clearance between 6th gear (A) and the angular ball bearing (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 11.

Standard: 0.06-0.16 mm (0.002-0.006 in.) Service Limit: 0.25 mm (0.010 in.)

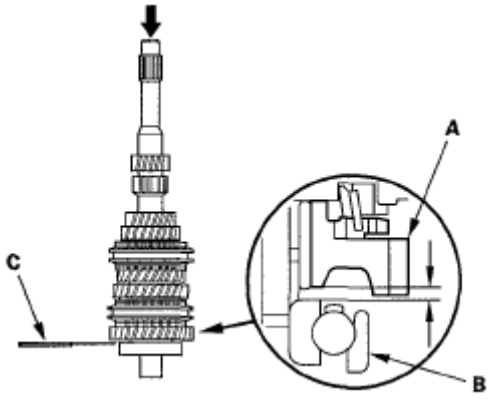


Fig. 108: Identifying 6th Gear, Angular Ball Bearing And Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Measure the length of the 6th gear distance collar.
    - If the length is not within the standard, replace the 6th gear distance collar.
    - If the length is within the standard, go to step 12.

Standard: 24.03-24.08 mm (0.946-0.948 in.)

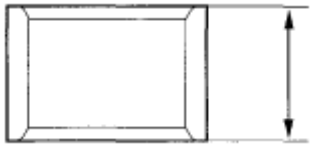


Fig. 109: Identifying Length Of 6th Gear Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Measure the thickness of 6th gear.

- If the thickness is less than the service limit, replace 6th gear.
- If the thickness is within the service limit, replace the 5th/6th synchro hub and 5th/6th synchro sleeve as a set.

Standard: 23.92-23.97 mm (0.941-0.944 in.) Service Limit: 23.80 mm (0.937 in.)

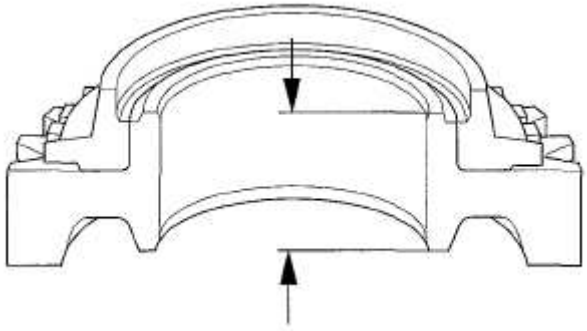


Fig. 110: Identifying Thickness Of 6th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT DISASSEMBLY

1. Remove the angular ball bearing (A) using a commercially available bearing separator (B) and bearing puller (C).

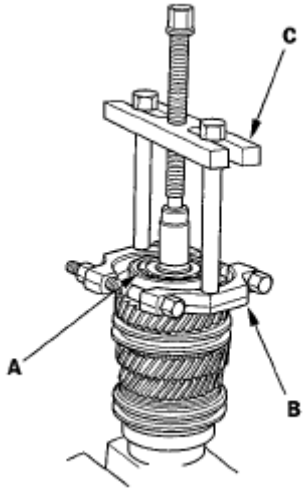


Fig. 111: Identifying Angular Ball Bearing, Bearing Separator And Bearing Puller
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Support 5th gear (A) on steel blocks, and press the mainshaft out of the 5th/6th synchro hub (B).

NOTE: Do not use a jaw-type puller; it can damage the gear teeth.

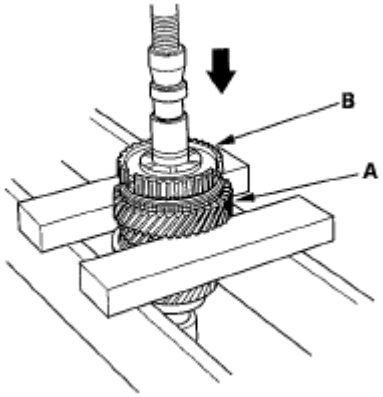


Fig. 112: Identifying 5th Gear And 5th/6th Synchro Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Support 3rd gear (A) on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub (B).

NOTE: Do not use a jaw-type puller; it can damage the gear teeth.

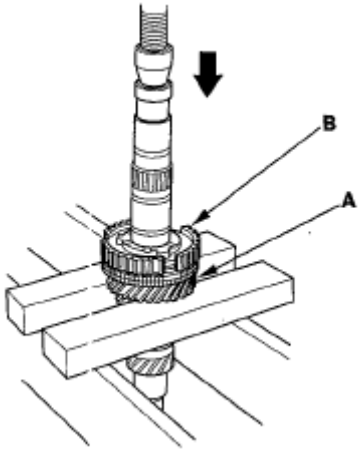


Fig. 113: Identifying 3rd Gear And 3rd/4th Synchro Hub

Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT INSPECTION

1. Inspect the gear and bearing contact areas for wear and damage, then measure the mainshaft at points A, B, C, D, and E. If any part of the mainshaft is less than the service limit, replace it.

   Standard:

   A Ball Bearing Contact Area (Transmission Housing Side): 27.987-28.000 mm (1.1019-1.1024 in.)

   B Distance Collar Contact Area: 31.984-32.000 mm (1.2594-1.2598 in.)

   C Needle Bearing Contact Area: 38.984-39.000 mm (1.5348-1.5354 in.)

   D Ball Bearing Contact Area (Clutch Housing Side): 27.977-27.990 mm (1.1015-1.1020 in.)

   E Bushing Contact Area: 20.80-20.85 mm (0.819-0.821 in.)

   Service Limit:

   A: 27.93 mm (1.100 in.)

   B: 31.93 mm (1.257 in.)

   C: 38.93 mm (1.533 in.)

   D: 27.92 mm (1.099 in.)

   E: 20.75 mm (0.817 in.)

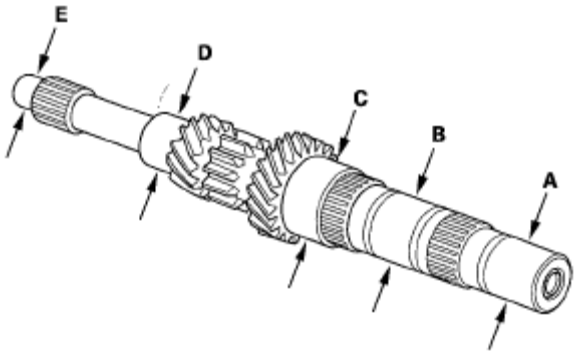


Fig. 114: Inspecting Gear And Bearing Contact Areas
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the runout by supporting both ends of the mainshaft. Then rotate the mainshaft two complete turns while measuring with a dial gauge. If the runout is more than the service limit, replace the mainshaft.

   Standard:

   0.02 mm (0.001 in.) max. Service Limit: 0.05 mm (0.002 in.)

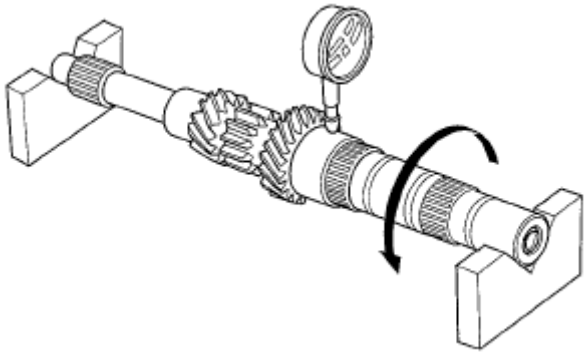


Fig. 115: Inspecting Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT REASSEMBLY

Exploded View

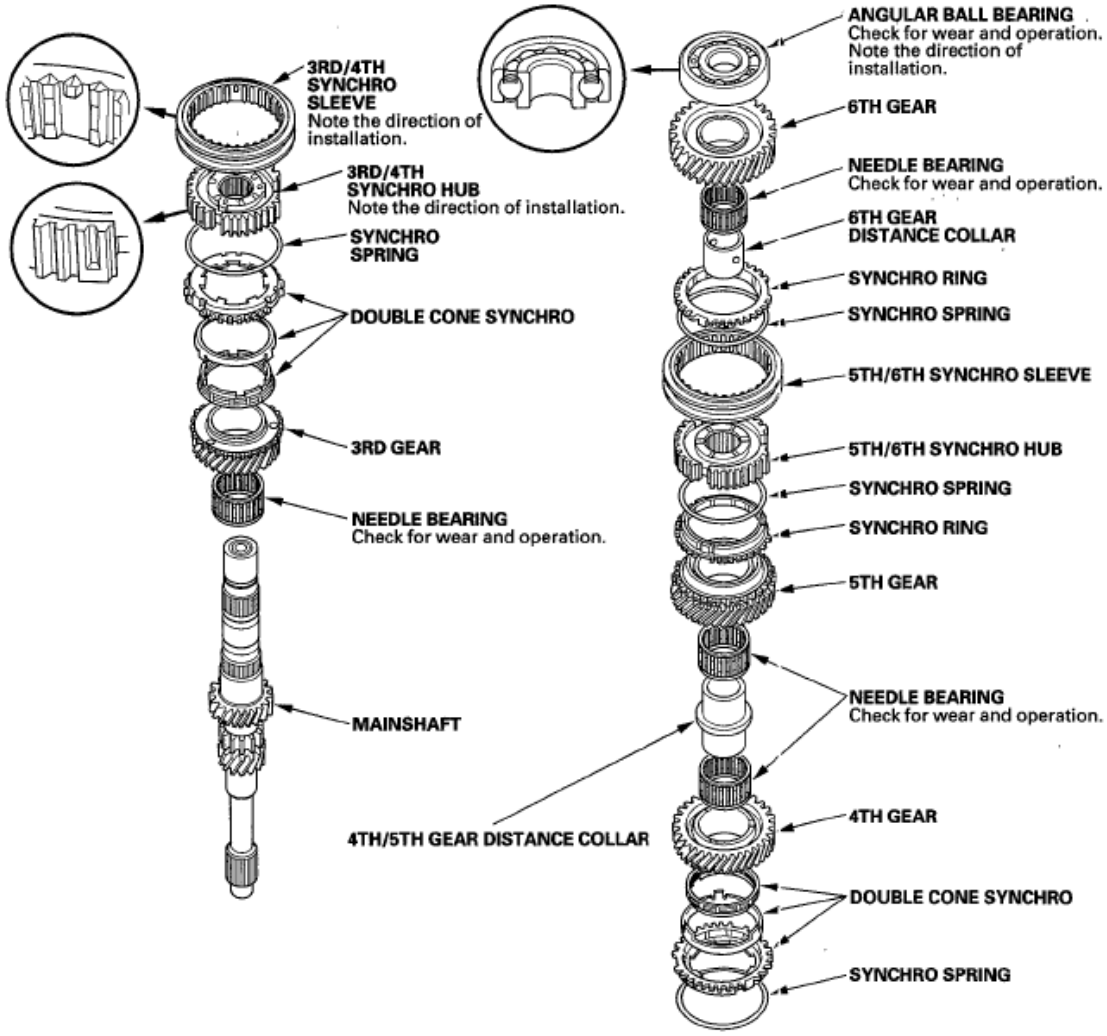


Fig. 116: Exploded View Of Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

NOTE: Refer to the EXPLODED VIEW, as needed, during this procedure.

1. Clean all the parts in solvent, dry them, and apply manual transmission fluid (MTF) to all contact surfaces except the 3rd/4th and 5th/6th synchro hubs.

2. Install the needle bearing and 3rd gear on the mainshaft.
3. Install the double cone synchro assembly (A) by aligning the synchro cone fingers (B) with the holes in 3rd gear (C), then install the synchro spring (D).

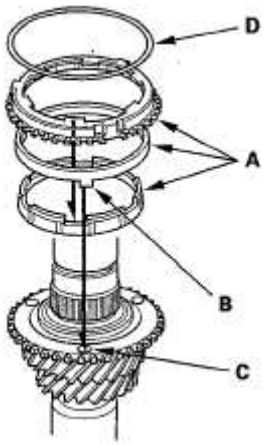


Fig. 117: Identifying Double Cone Synchro Assembly, Synchro Cone Fingers, 3rd Gear And Synchro Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the 3rd/4th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves in the 3rd/4th synchro hub (C).

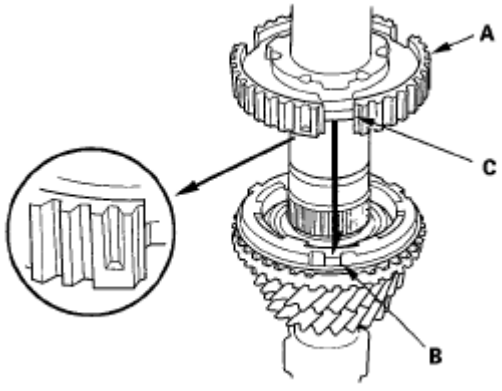


Fig. 118: Identifying 3rd/4th Synchro Hub, Synchro Ring Fingers And 3rd/4th Synchro Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the 3rd/4th synchro hub (A) using the 40 mm I.D. driver (B).

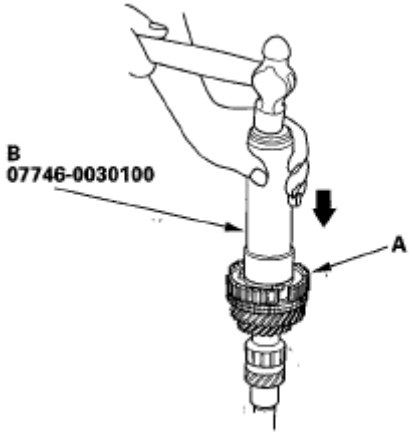


Fig. 119: Identifying 3rd/4th Synchro Hub And Driver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the 3rd/4th synchro sleeve (A) by aligning the stops (B) of the 3rd/4th synchro sleeve and 3rd/4th synchro hub. After installing, check the operation of the 3rd/4th synchro hub set.

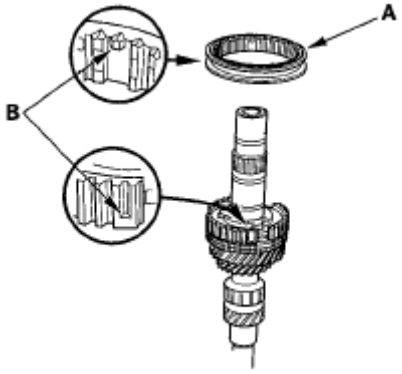


Fig. 120: Identifying 3rd/4th Synchro Sleeve And Stops
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the synchro spring (A).

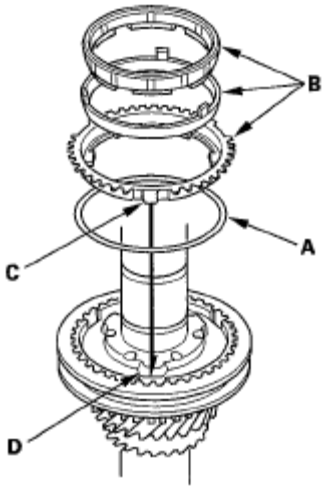


Fig. 121: Identifying Synchro Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the double cone synchro assembly (B) by aligning the synchro ring fingers (C) with the grooves in the 3rd/4th synchro hub (D).
9. Install 4th gear (A) by aligning the synchro cone fingers (B) with the holes in 4th gear (C).

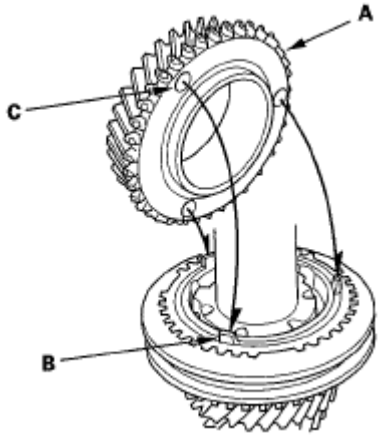


Fig. 122: Identifying 4th Gear, Synchro Cone Fingers And 4th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the needle bearings, 4th/5th gear distance collar, 5th gear, 5th gear synchro spring, and the synchro ring.
11. Install the 5th/6th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves in the 5th/6th synchro hub (C).

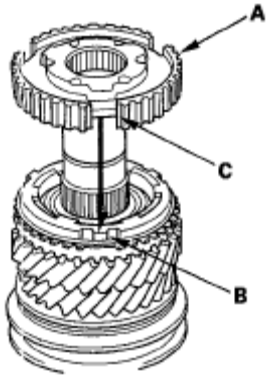


Fig. 123: Identifying 5th/6th Synchro Hub, Synchro Ring Fingers And 5th/6th Synchro Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the 5th/6th synchro hub (A) using the 40 mm I.D. driver (B) and 30 mm I.D. attachment (C).

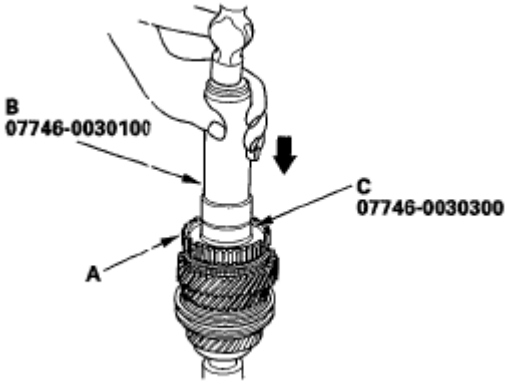


Fig. 124: Identifying 5th/6th Synchro Hub, I.D. Driver And I.D. Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the 5th/6th synchro sleeve.
14. Install the synchro spring (A).

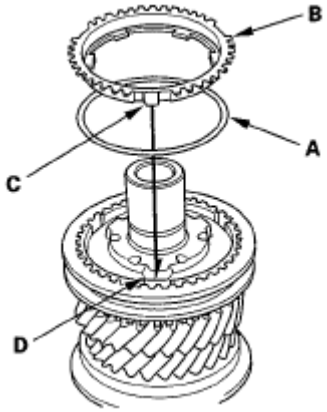


Fig. 125: Identifying Synchro Spring, Synchro Ring And Synchro Ring Fingers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the synchro ring (B) by aligning the synchro ring fingers (C) with the grooves in the 5th/6th synchro hub (D).
16. Install the 6th gear distance collar, needle bearing, and 6th gear.
17. Install the new angular ball bearing (A) using the 40 mm I.D. driver (B), 30 mm I.D. attachment (C), and press (D).

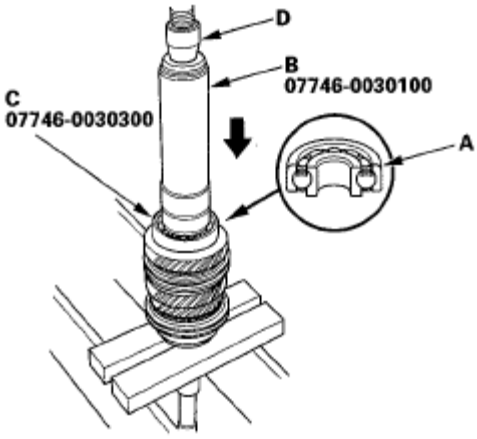


Fig. 126: Identifying Angular Ball Bearing, I.D. Driver And I.D. Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT ASSEMBLY CLEARANCE INSPECTION

1. Measure the clearance between 1st gear (A) and the distance collar (B) with a

feeler gauge (C).

- If the clearance is more than the service limit, go to step 2.
- If the clearance is within the service limit, go to step 4.

Standard: 0.06-0.16 mm (0.002-0.006 in.)

Service Limit: 0.25 mm (0.010 in.)

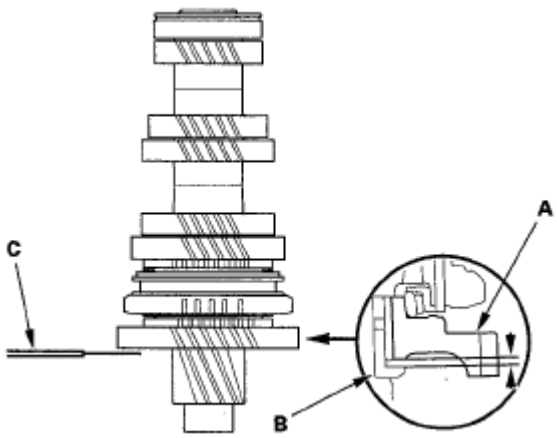


Fig. 127: Identifying 1st Gear, Distance Collar And Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the length of the distance collar as shown.
   - If the length is not within the standard, replace the distance collar.
   - If the length is within the standard, go to step 3.

   Standard: 23.03-23.08 mm (0.907-0.909 in.)

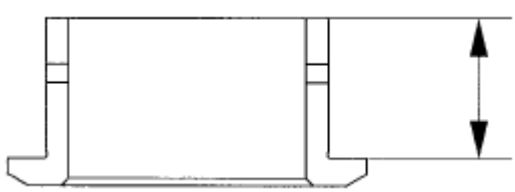


Fig. 128: Identifying Length Of Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Measure the thickness of 1st gear.
   - If the thickness is less than the service limit, replace 1st gear.

- If the thickness is within the service limit, replace the 1st/2nd synchro hub and reverse gear as a set.

Standard: 22.92-22.97 mm (0.902-0.904 in.)

Service Limit: 22.87 mm (0.900 in.)

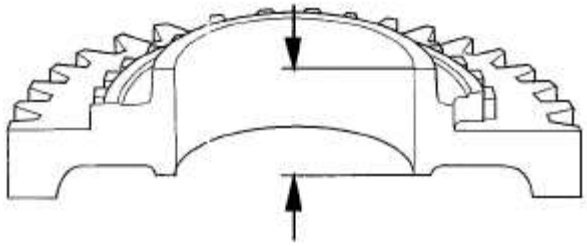


Fig. 129: Identifying Thickness Of 1st Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the clearance between 2nd gear (A) and 3rd gear (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 5.

   Standard: 0.06-0.16 mm (0.002-0.006 in.)

   Service Limit: 0.25 mm (0.010 in.)

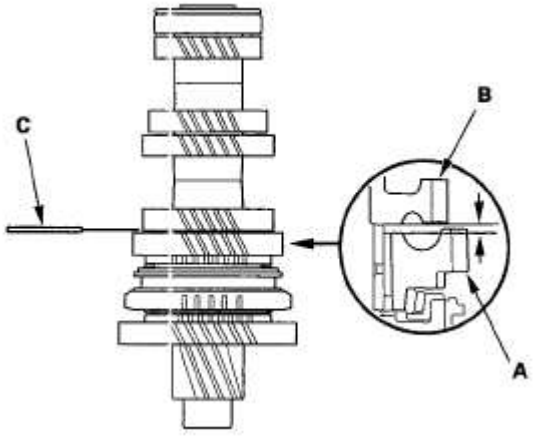


Fig. 130: Identifying 1st Gear, Distance Collar And Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the length of the distance collar.

- If the length is not within the standard, replace the distance collar.
- If the length is within the standard, go to step 6.

Standard: 28.03-28.08 mm (1.104-1.106 in.)

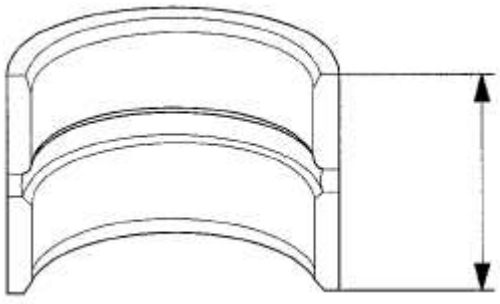


Fig. 131: Identifying Length Of Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Measure the thickness of 2nd gear.
   - If the thickness is less than the service limit, replace 2nd gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and reverse gear as a set.

Standard: 27.92-27.97 mm (1.099-1.101 in.)

Service Limit: 27.87 mm (1.097 in.)

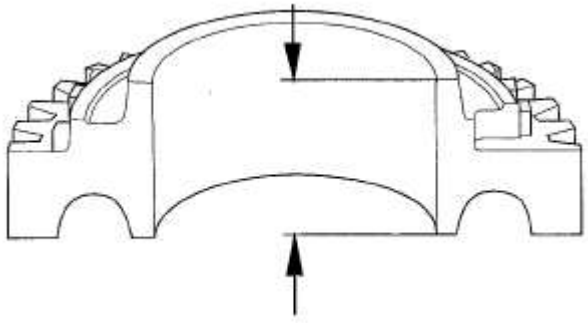


Fig. 132: Identifying Thickness Of 2nd Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT DISASSEMBLY

1. Securely clamp the countershaft assembly in a bench vise with wood blocks.

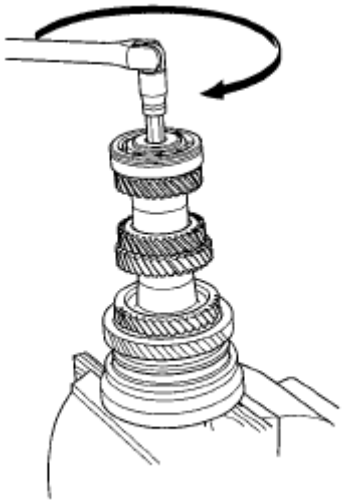


Fig. 133: Identifying Countershaft Assembly In Bench Vise
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the special bolt (left-hand threads).
3. Support 6th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.

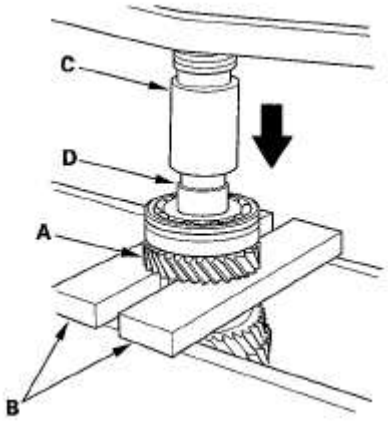


Fig. 134: Identifying 6th Gear, Steel Blocks, Press And Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the 35 mm shim.
5. Support 4th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of the 5th gear.

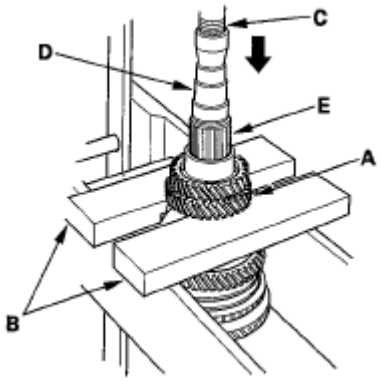


Fig. 135: Identifying 4th Gear, Steel Blocks, Press, Attachment And Countershaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Support 2nd gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 3rd gear.

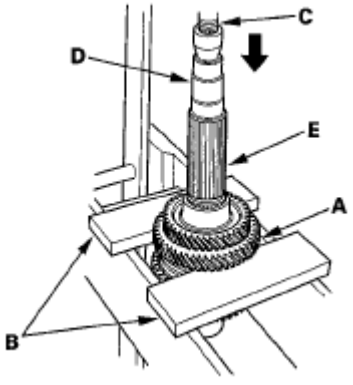


Fig. 136: Identifying 2nd Gear, Steel Blocks, Press And Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT INSPECTION

1. Inspect the gear and bearing contact areas for wear and damage, then measure the countershaft at points A, B, and C. If any part of the countershaft is less than the service limit, replace it.

   Standard:

   A Ball Bearing Contact Area (Transmission Housing Side):

30.020-30.033 mm (1.1819-1.1824 in.)

B Distance Collar Contact Area:

39.937-39.950 mm (1.5723-1.5728 in.)

C Needle Bearing Contact Area (Clutch Housing Side):

35.000-35.015 mm (1.3780-1.3785 in.)

Service Limit:

A: 29.97 mm (1.180 in.)

B: 39.883 mm (1.5702 in.)

C: 34.95 mm (1.3760 in.)

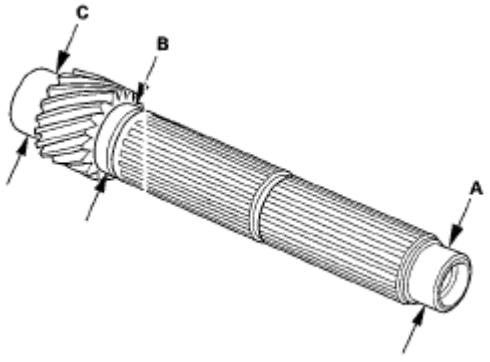


Fig. 137: Inspecting Gear And Bearing Contact Areas
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the runout by supporting both ends of the countershaft. Then rotate the countershaft two complete turns while measuring with a dial gauge. If the runout is more than the service limit, replace the countershaft.

Standard: 0.02 mm (0.001 in.) max.

Service Limit: 0.05 mm (0.002 in.)

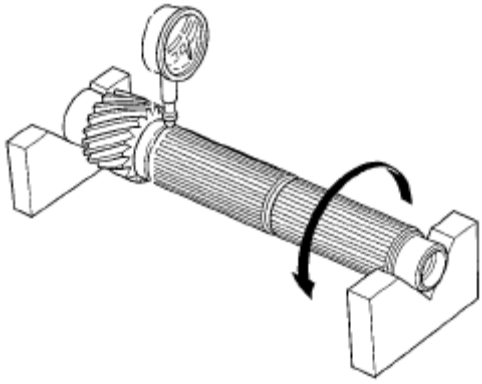


Fig. 138: Inspecting Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT REASSEMBLY

Exploded View

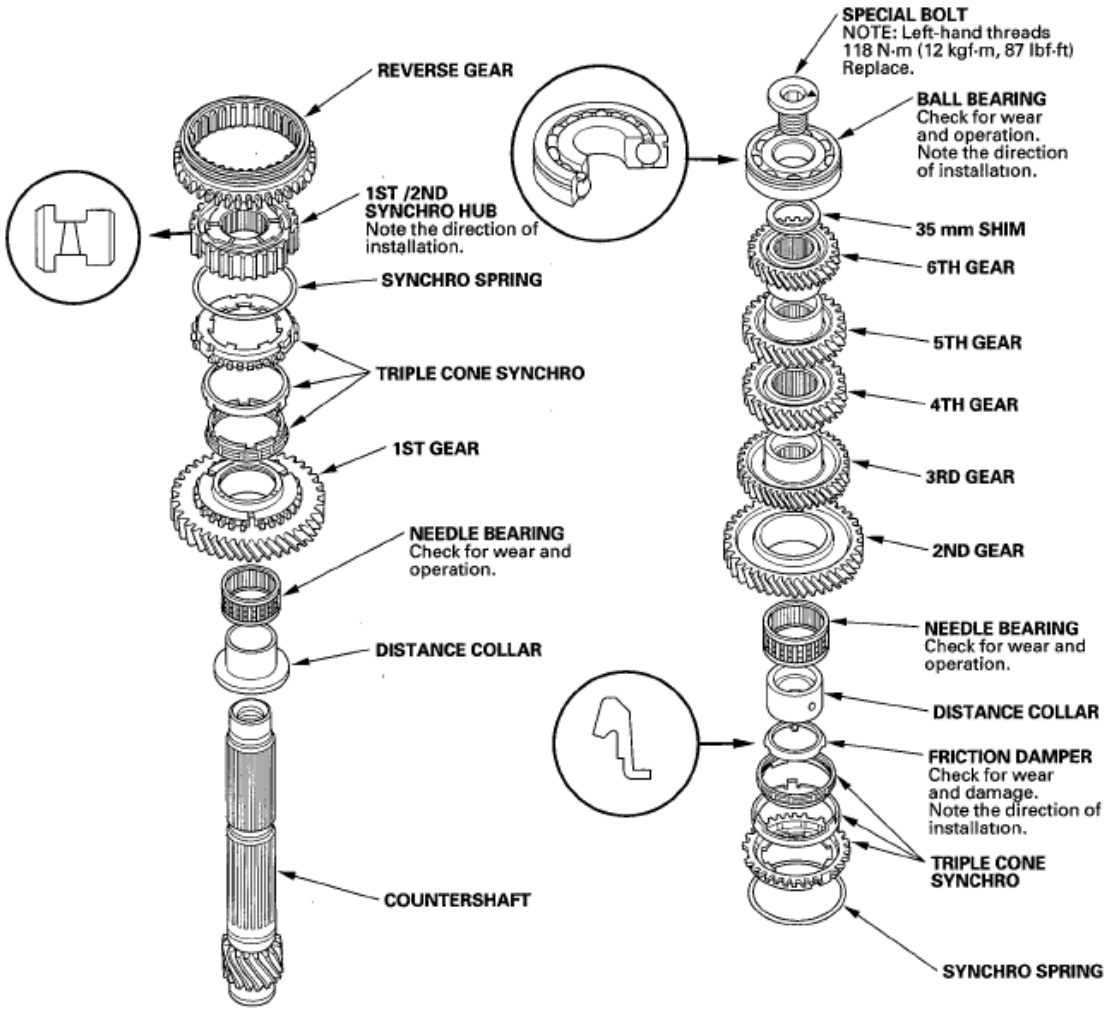


Fig. 139: Exploded View Of Countershaft w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

NOTE: Refer to the EXPLODED VIEW, as needed, during this procedure.

1. Clean all parts in solvent, dry them, and apply manual transmission fluid (MTF) to all contact surfaces.
2. Install the distance collar and needle bearing onto the countershaft.

3. Install 1st gear.
4. Install the triple cone synchro assembly (A) by aligning the synchro ring fingers (B) with the grooves in 1st gear (C), then install the synchro spring (D).

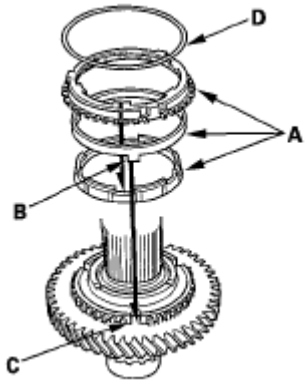


Fig. 140: Identifying Triple Cone Synchro Assembly, Synchro Ring Fingers And 1st Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the 1st/2nd synchro hub (A) by aligning the synchro ring fingers (B) with the grooves in the 1st/2nd synchro hub (C).

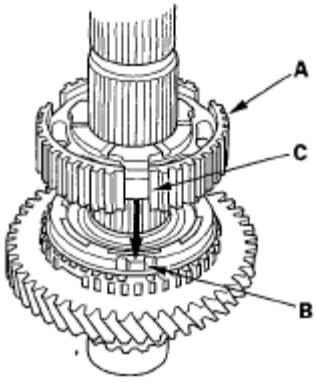


Fig. 141: Identifying 1st/2nd Synchro Hub, Synchro Ring Fingers And 1st/2nd Synchro Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install reverse gear.
7. Install the synchro spring (A).

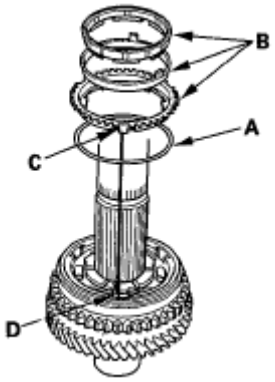


Fig. 142: Identifying Synchro Spring, Triple Cone Synchro Assembly And Synchro Ring Fingers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the triple cone synchro assembly (B) by aligning the synchro ring fingers (C) with the grooves in the 1st/2nd synchro hub (D).
9. Install the distance collar (A) and friction damper (B) by aligning the friction damper fingers (C) with the grooves in the 1st/2nd synchro hub (D).

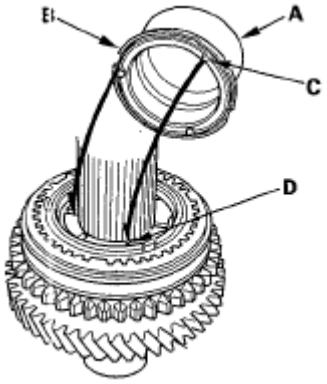


Fig. 143: Identifying Distance Collar, Friction Damper And Friction Damper Fingers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the needle bearing.
11. Install 2nd gear (A) by aligning the synchro cone fingers (B) with the grooves (C) in 2nd gear.

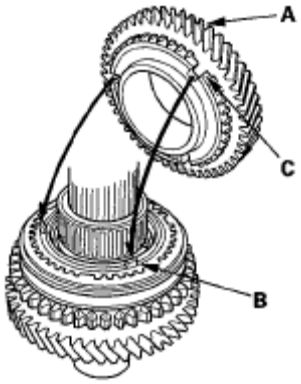


Fig. 144: Identifying 2nd Gear, Synchro Cone Fingers And Grooves
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Support the countershaft (A) on steel blocks, then install 3rd gear (B) using the 40 mm I.D. driver (C) and a press (D).

NOTE: Do not exceed the maximum pressure.

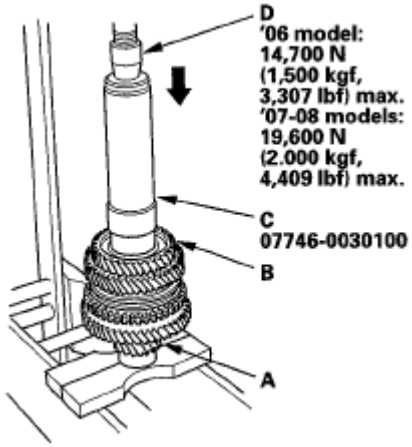


Fig. 145: Identifying Countershaft And 3rd Gear w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install 4th gear (A) using the 40 mm I.D. driver (B) and a press (C).

NOTE: Do not exceed the maximum pressure.

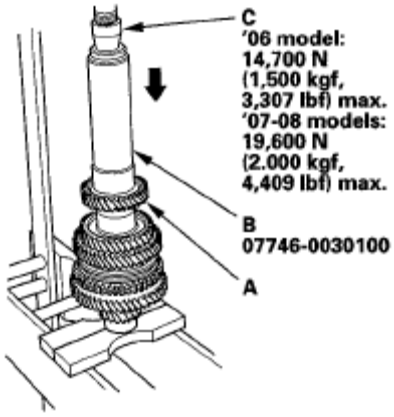


Fig. 146: Identifying 4th Gear, I.D. Driver, Press & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install 5th gear (A) using the 40 mm I.D. driver (B) and a press (C).

NOTE: Do not exceed the maximum pressure.

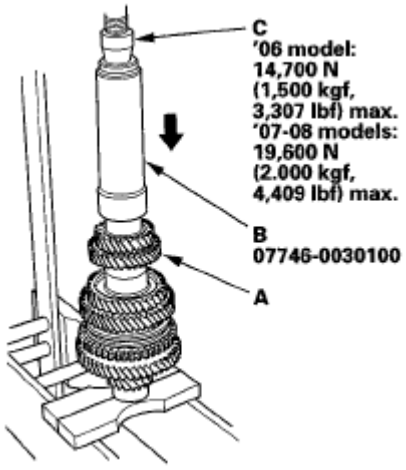


Fig. 147: Identifying 5th Gear, I.D. Driver, Press & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install 6th gear (A) using the 40 mm I.D. driver (B), 30 mm I.D. attachment (C), and a press (D).

NOTE: Do not exceed the maximum pressure.

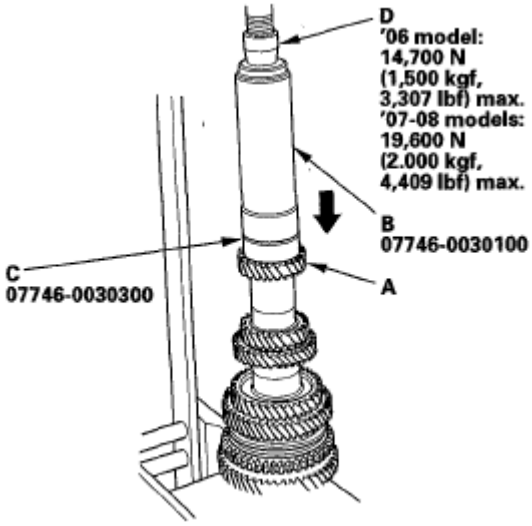


Fig. 148: Identifying 6th Gear, I.D. Driver, I.D. Attachment, Press & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the 35 mm shim and the old ball bearing (A) using the 40 mm I.D. driver (B), 30 mm I.D. attachment (C), and a press (D).

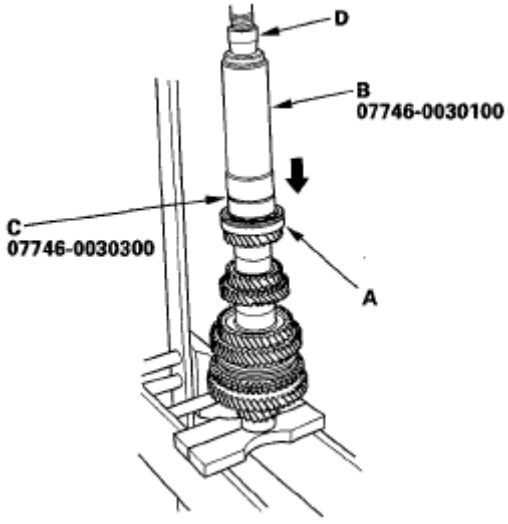


Fig. 149: Identifying Ball Bearing, I.D. Driver, I.D. Attachment And Press
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Measure the clearance between the old bearing (A) and the 35 mm shim (B) with a feeler gauge (C).

Standard: 0.04-0.10 mm (0.0016-0.0039 in.)

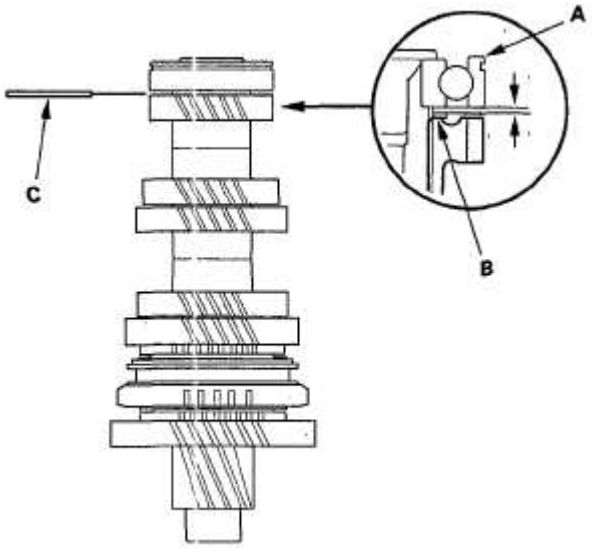


Fig. 150: Identifying Bearing, Shim And Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. If the clearance is more than the standard, select a new shim from the following table. If the clearance measured in step 16 is within the standard, replace only the ball bearing.

35 mm Shim

PART THICKNESS CHART

	Part Number	Thickness
A	23981-PPP-000	0.87 mm (0.034 in.)
AA	23981-PPP-900	0.91 mm (0.036 in.)
B	23982-PPP-000	0.95 mm (0.037 in.)
AB	23982-PPP-900	0.99 mm (0.039 in.)
C	23983-PPP-000	1.03 mm (0.041 in.)
AC	23983-PPP-900	1.07 mm (0.042 in.)
D	23984-PPP-000	1.11 mm (0.044 in.)
AD	23984-PPP-900	1.15 mm (0.045 in.)
E	23985-PPP-000	1.19 mm (0.047 in.)
AE	23985-PPP-900	1.23 mm (0.048 in.)

F	23986-PPP-000	1.27 mm (0.050 in.)
AF	23986-PPP-900	1.31 mm (0.052 in.)
G	23987-PPP-000	1.35 mm (0.053 in.)
AG	23987-PPP-900	1.39 mm (0.055 in.)
H	23988-PPP-000	1.43 mm (0.056 in.)
AH	23988-PPP-900	1.47 mm (0.058 in.)
J	23989-PPP-000	1.51 mm (0.060 in.)
AJ	23989-PPP-900	1.55 mm (0.061 in.)
K	23990-PPP-000	1.59 mm (0.063 in.)
AK	23990-PPP-900	1.63 mm (0.064 in.)
L	23991-PPP-000	1.67 mm (0.066 in.)
AL	23991-PPP-900	1.71 mm (0.067 in.)
M	23992-PPP-000	1.75 mm (0.069 in.)
AM	23992-PPP-900	1.79 mm (0.070 in.)
N	23993-PPP-000	1.83 mm (0.072 in.)
AN	23993-PPP-900	1.87 mm (0.074 in.)
P	23994-PPP-000	1.91 mm (0.075 in.)
AP	23994-PPP-900	1.95 mm (0.077 in.)
Q	23995-PPP-000	1.99 mm (0.078 in.)

19. Support 6th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.

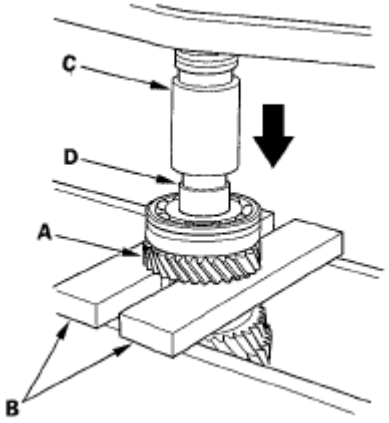


Fig. 151: Identifying 6th Gear, Steel Blocks, Press And Attachment

Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. If necessary, install the 35 mm shim selected in step 18.
21. Install 6th gear (A) using the 40 mm I.D. driver (B), 30 mm I.D. attachment (C), and a press (D).

NOTE: Do not exceed the maximum pressure.

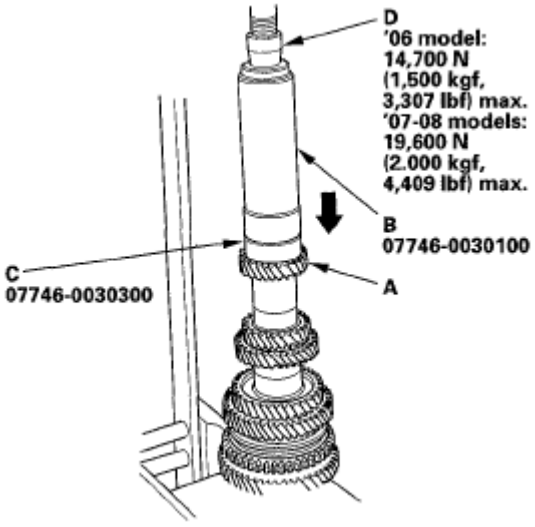


Fig. 152: Identifying 6th Gear, I.D. Driver, I.D. Attachment, Press & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Install the new ball bearing (A) using the 40 mm I.D. driver (B), 30 mm I.D. attachment (C), and a press (D), then recheck the clearance.

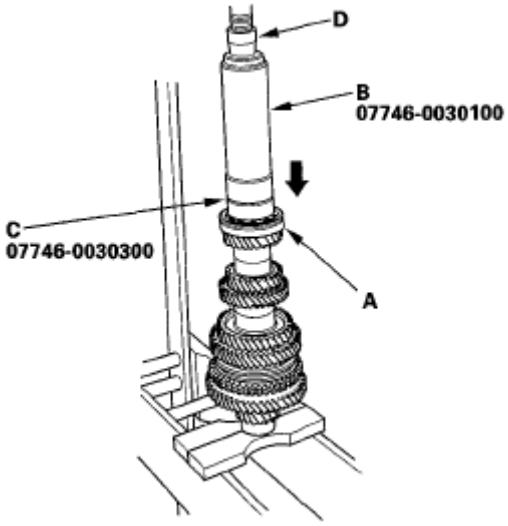


Fig. 153: Identifying Ball Bearing, I.D. Driver, I.D. Attachment And Press
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Securely clamp the countershaft assembly in a bench vise with wood blocks (A).

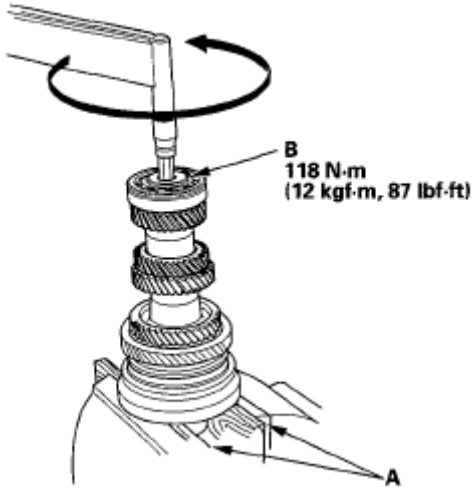


Fig. 154: Identifying Clamp Countershaft Assembly In Bench Vise, Wood Blocks & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

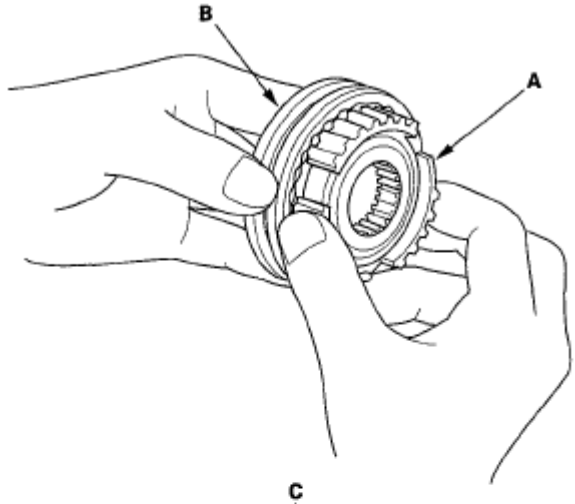
24. Tighten the new special bolt (B) (left-hand threads).

SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY

1. Inspect gear teeth on all synchro hubs and synchro sleeves for rounded off corners, which indicate wear.
2. Install each synchro hub (A) in its mating synchro sleeve (B), and check for free movement. Make sure to match the three sets of longer teeth (C) (120 degrees apart) on the synchro sleeve with the three sets of deeper grooves (D) in the synchro hub.

NOTE:

- **Do not install the synchro sleeve with its longer teeth in the synchro hub slots (E) because it will damage the spring ring.**
- **If replacement is required, always replace the synchro sleeve and synchro hub as a set.**



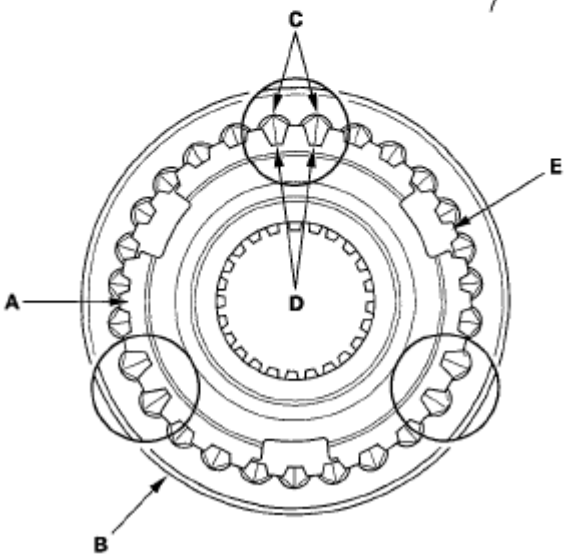


Fig. 155: Identifying Synchro Hub, Mating Synchro Sleeve And Longer Teeth
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYNCHRO RING AND GEAR INSPECTION

1. Inspect the inside of each synchro ring (A) for wear. Inspect the teeth (B) on each synchro ring for wear (rounded off).

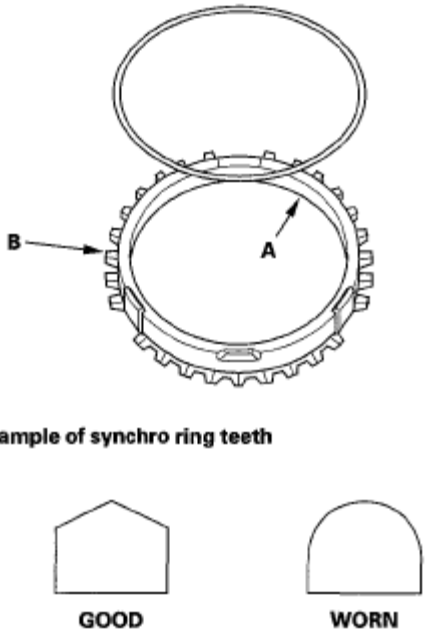


Fig. 156: Identifying Synchro Ring And Teeth
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the teeth (A) on each synchro sleeve and matching teeth on each gear for wear (rounded off).

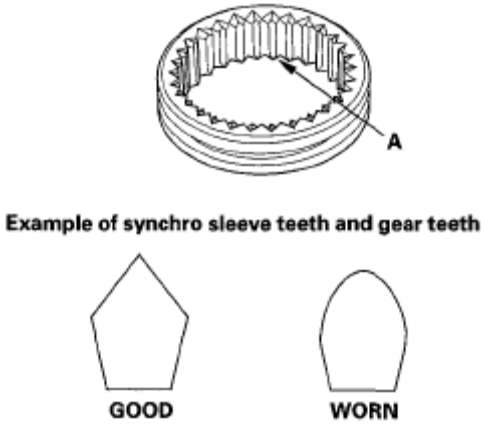


Fig. 157: Inspecting Teeth On Synchro Sleeve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Inspect the thrust surface (A) on each gear hub for wear.

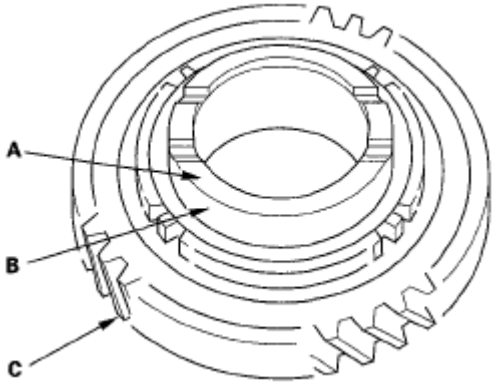


Fig. 158: Identifying Thrust Surface, Cone Surface And Gears
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Inspect the cone surface (B) on each gear hub for wear and roughness.
5. Inspect the teeth on all gears (C) for uneven wear, scoring, and cracks.
6. Coat the cone surface of each gear with manual transmission fluid (MTF), and place its synchro ring on it. Rotate the synchro ring, making sure that it does not slip.
7. Measure the clearance between each gear (A) and its synchro ring (B) all around the gear. Hold the synchro ring against the gear evenly while measuring the clearance. If the clearance is less than the service limit, replace the synchro ring and gear.

Synchro-Ring-to-Gear Clearance

Standard: 0.70-1.49 mm (0.028-0.059 in.)

Service Limit: 0.4 mm (0.016 in.)

Double Cone Synchro-to-Gear Clearance Standard:

(1): Outer Synchro Ring (B) to Synchro Cone (C)

0.70-1.19 mm (0.028-0.047 in.)

(2): Synchro Cone (C) to Gear (A)

0.50-1.04 mm (0.020-0.041 in.)

(3): Outer Synchro Ring (B) to Gear (A)

0.95-1.68 mm (0.037-0.066 in.)

Service Limit:

(1): 0.3 mm (0.012 in.)

(2): 0.3 mm (0.012 in.)

(3): 0.6 mm (0.024 in.)

Triple Cone Synchro-to-Gear Clearance Standard:

(1): Outer Synchro Ring (B) to Synchro Cone (C)

0.70-1.19 mm (0.028-0.047 in.)

(2): Synchro Cone (C) to Gear (A)

0.50-1.04 mm (0.020-0.041 in.)

(3): Outer Synchro Ring (B) to Gear (A)

0.95-1.68 mm (0.037-0.066 in.)

Service Limit:

(1): 0.3 mm (0.012 in.)

(2): 0.3 mm (0.012 in.)

(3): 0.6 mm (0.024 in.)

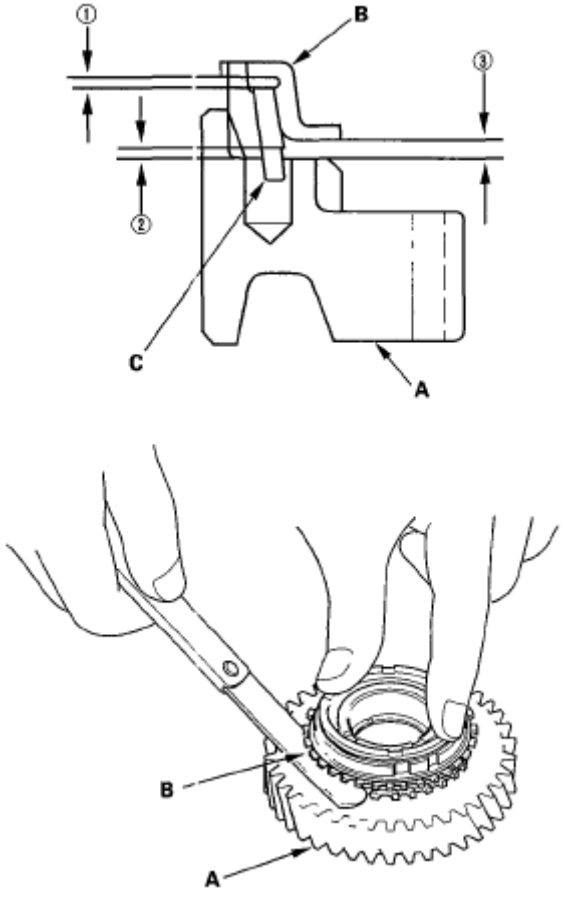


Fig. 159: Identifying Gear And Synchro Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT BEARING AND OIL SEAL REPLACEMENT

Special Tools Required

- Oil seal driver 07JAD-PL90100

- Adjustable bearing puller, 20-40 mm 07736-A01000B
- Attachment, 42 x 47 mm 07746-0010300
- Driver 07749-001000
- Slide hammer, 3/8"-16 UNF commercially available

1. Remove the ball bearing (A) from the clutch housing (B) using the 20-40 mm adjustable bearing puller (C) and a commercially available 3/8"-16 UNF slide hammer (D).

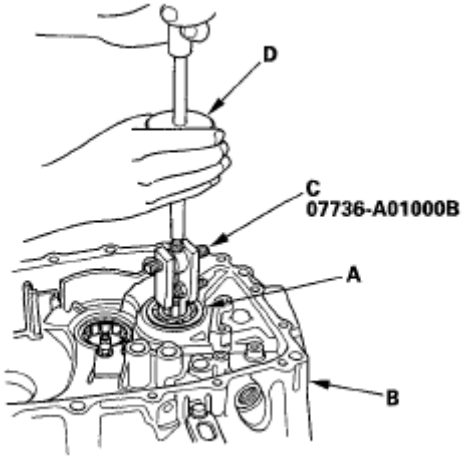


Fig. 160: Identifying Ball Bearing, Clutch Housing And Adjustable Bearing Puller
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the oil seal (A) from the transmission side. Be careful when removing the oil seal so the clutch housing is not damaged.

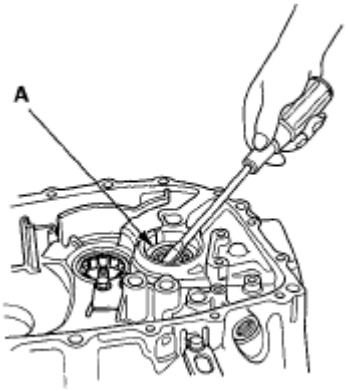


Fig. 161: Identifying Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Drive in the new oil seal from the transmission side using the driver (A) and 42 x 47 mm attachment (B).

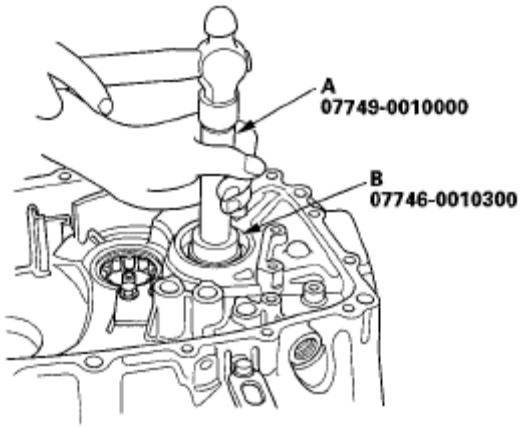


Fig. 162: Identifying Driver And Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Drive in the new ball bearing (A) from the transmission side using the oil seal driver (B).

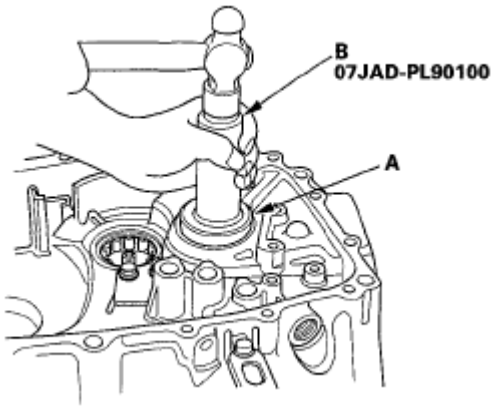


Fig. 163: Identifying Ball Bearing And Oil Seal Driver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT BEARING REPLACEMENT

Special Tools Required

- Oil seal driver 07JAD-PL90100
- Adjustable bearing puller, 20-40 mm 07736-A01000B
- Slide hammer, 3/8"-16 UNF commercially available.

1. Remove the bearing set plate (A) from the clutch housing (B).

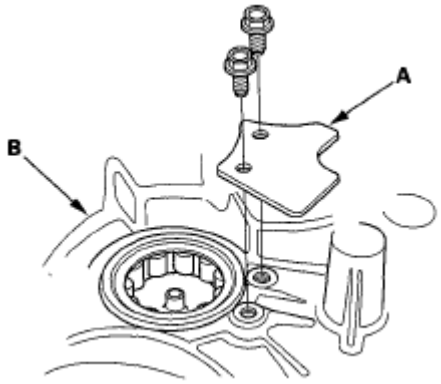


Fig. 164: Identifying Bearing Set Plate And Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the needle bearing (A) using the 20-40 mm adjustable bearing puller (B) and a commercially available 3/8"-16 UNF slide hammer (D), then remove oil guide plate C.

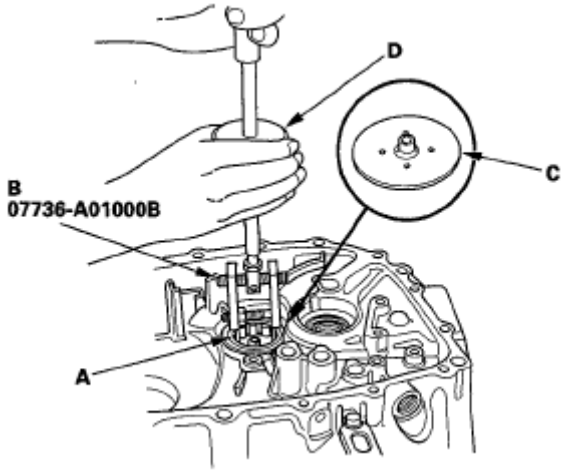


Fig. 165: Identifying Needle Bearing, Adjustable Bearing Puller, Slide Hammer And Oil Guide Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Position oil guide plate C and new needle bearing (A) in the bore of the clutch housing (B).

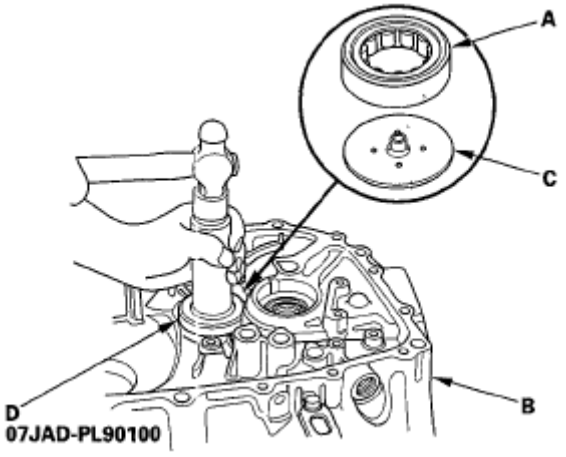


Fig. 166: Identifying Needle Bearing And Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the needle bearing using the oil seal driver (D).
5. Install the bearing set plate (A) with the bolts (B).

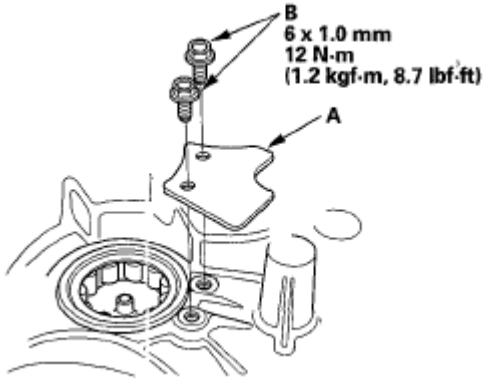


Fig. 167: Identifying Bearing Set Plate, Bolts w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT THRUST CLEARANCE ADJUSTMENT

Special Tools Required

- Mainshaft holder 07GAJ-PG20110

- Mainshaft base 07GAJ-PG20130

NOTE:
- **Take measurement at normal room temperature.**
- **Clean all the parts thoroughly before installation.**

1. Remove the 72 mm shim (A) and oil guide plate M from the transmission housing (B).

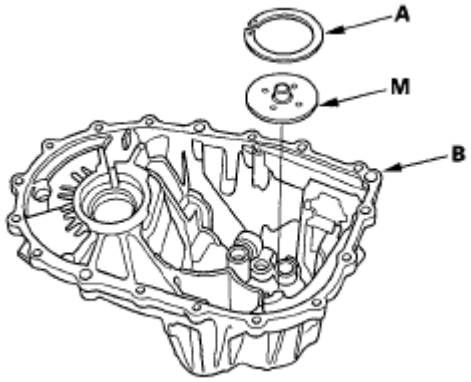


Fig. 168: Identifying Shim And Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Thoroughly clean the 28 mm spring washer (A) and 28 mm washer (B) before installing them on the clutch housing side ball bearing (C).

NOTE: Install the spring washer in the direction shown.

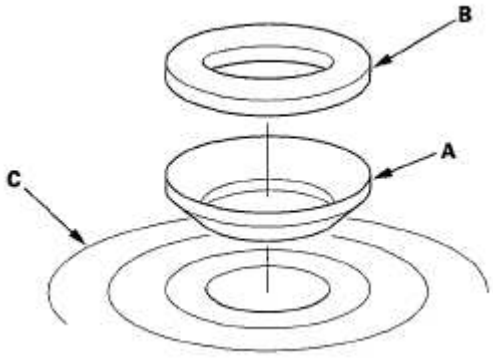


Fig. 169: Identifying Spring Washer, Washer And Clutch Housing Side Ball Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the 3rd/4th synchro hub, the distance collar, the 5th/6th synchro hub, the distance collar, and the angular ball bearing on the mainshaft.

NOTE: Refer to the MAINSHAFT REASSEMBLY Exploded View .

4. Install the mainshaft in the clutch housing.
5. Place the transmission housing over the mainshaft and onto the clutch housing.
6. Tighten the clutch and transmission housings with several 8 mm bolts.

NOTE: It is not necessary to use sealing agent between the housing for this procedure.

7. Lightly tap on the mainshaft with a plastic hammer.
8. Attach the mainshaft holder (A) and mainshaft base (B) to the mainshaft as follows:
   - Backout the mainshaft holder bolt (C), and loosen the two hex bolts (D).
   - Fit the holder over the mainshaft so its lip is towards the transmission.
   - Align the mainshaft holder lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.

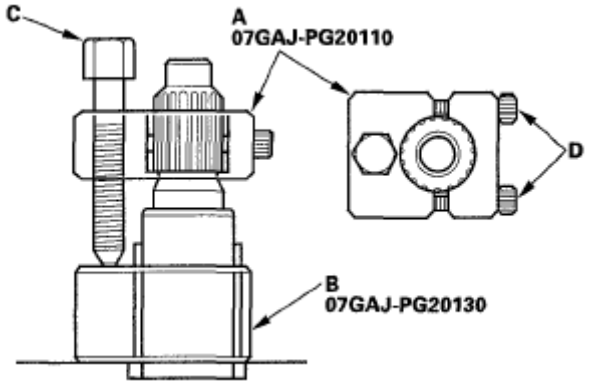


Fig. 170: Identifying Mainshaft Holder And Mainshaft Base
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Fully seat the mainshaft by tapping its end with a plastic hammer.
10. Thread the mainshaft holder bolt in until it just contacts the wide surface of the

mainshaft base.

11. Zero a dial gauge (A) on the end of the mainshaft.

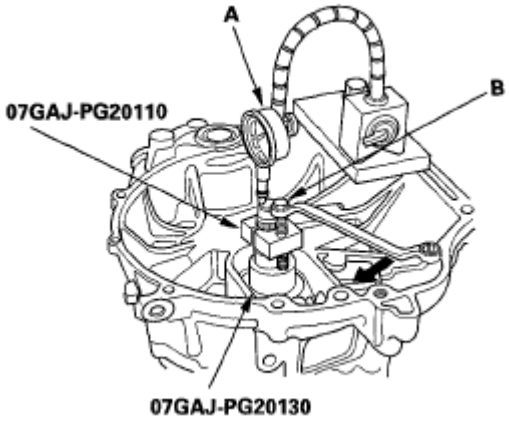


Fig. 171: Identifying Dial Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Turn the mainshaft holder bolt (B) clockwise; stop turning when the dial gauge has reached its maximum movement. The reading on the dial gauge is the amount of mainshaft thrust clearance.

NOTE: Do not turn the mainshaft holder bolt more than 60 degrees after the needle of the dial gauge stops moving. Applying more pressure with the mainshaft holder bolt could damage the transmission.

13. If the reading is within the standard, the clearance is correct. If the reading is not within the standard, select the appropriate shim needed from the table, and recheck the thrust clearance.

Standard: 0.11-0.17 mm (0.004-0.007 in.)

(Example)

Measure reading: 1.93 mm (0.0759 in.)

Subtract the total clearance measurement from the middle of the clearance standard 0.14 mm (0.0056 in.).

1.93 - 0.14 = 1.79 mm (0.0704 in.)

Select the shim closest to the amount calculated. For this example, the 1.80 mm (0.0709 in.) shim is best.

14. With oil guide plate M and the appropriate size shim installed in the transmission housing, check the thrust clearance again to make sure the clearance is within the standard.

72 mm Shim

PART THICKNESS CHART

	Part Number	Thickness
A	23931-P21-000	0.60 mm (0.0236 in.)
B	23932-P21-000	0.63 mm (0.0248 in.)
C	23933-P21-000	0.66 mm (0.0260 in.)
D	23934-P21-000	0.69 mm (0.0271 in.)
E	23935-P21-000	0.72 mm (0.0283 in.)
F	23936-P21-000	0.75 mm (0.0295 in.)
G	23937-P21-000	0.78 mm (0.0307 in.)
H	23938-P21-000	0,81 mm (0.0319 in.)
I	23939-P21-000	0.84 mm (0.0331 in.)
J	23940-P21-000	0.87 mm (0.0343 in.)
K	23941-P21-000	0.90 mm (0.0354 in.)
L	23942-P21-000	0.93 mm (0.0366 in.)
M	23943-P21-000	0.96 mm (0.0378 in.)
N	23944-P21-000	0.99 mm (0.0390 in.)
O	23945-P21-000	1.02 mm (0.0402 in.)
P	23946-P21-000	1.05 mm (0.0413 in.)
Q	23947-P21-000	1.08 mm (0.0425 in.)
R	23948-P21-000	1.11 mm (0.0437 in.)
S	23949-P21-000	1.14 mm (0.0449 in.)
T	23950-P21-000	1.17 mm (0.0461 in.)

U	23951-P21-000	1.20 mm (0.0472 in.)
V	23952-P21-000	1.23 mm (0.0484 in.)
W	23953-P21-000	1.26 mm (0.0496 in.)
X	23954-P21-000	1.29 mm (0.0508 in.)
Y	23955-P21-000	1.32 mm (0.0520 in.)
Z	23956-P21-000	1.35 mm (0.0531 in.)
AA	23957-P21-000	1.38 mm (0.0543 in.)
AB	23958-P21-000	1.41 mm (0.0555 in.)
AC	23959-P21-000	1.44 mm (0.0567 in.)
AD	23960-P21-000	1.47 mm (0.0579 in.)
AE	23961-P21-000	1.50 mm (0.0591 in.)
AF	23962-P21-000	1.53 mm (0.0602 in.)
AG	23963-P21-000	1.56 mm (0.0614 in.)
AH	23964-P21-000	1.59 mm (0.0626 in.)
AI	23965-P21-000	1.62 mm (0.0638 in.)
AJ	23966-P21-000	1.65 mm (0.0650 in.)
AK	23967-P21-000	1.68 mm (0.0661 in.)
AL	23968-P21-000	1.71 mm (0.0673 in.)
AM	23969-P21-000	1.74 mm (0.0685 in.)
AN	23970-P21-000	1.77 mm (0.0697 in.)
AO	23971-P21-000	1.80 mm (0.0709 in.)
AP	23972-PPP-J00	1.83 mm (0.0720 in.)
AQ	23973-PPP-J00	1.86 mm (0.0732 in.)
AR	23974-PPP-J00	1.89 mm (0.0744 in.)
AS	23975-PPP-J00	1.92 mm (0.0756 in.)
AT	23976-PPP-J00	1.95 mm (0.0768 in.)
AV	23977-PPP-J00	1.98 mm (0.0779 in.)
AW	23978-PPP-J00	2.01 mm (0.0791 in.)
AX	23979-PPP-J00	2.04 mm (0.0803 in.)
AY	23980-PPP-J00	2.07 mm (0.0815 in.)
AZ	23981-PPP-J00	2.10 mm (0.0827 in.)

BA	23982-PPP-J00	2.13 mm (0.0839 in.)
BB	23983-PPP-J00	2.16 mm (0.0850 in.)
BC	23984-PPP-J00	2.19 mm (0.0862 in.)
BD	23985-PPP-J00	2.22 mm (0.0874 in.)
BE	23986-PPP-J00	2.25 mm (0.0886 in.)

TRANSMISSION REASSEMBLY

NOTE:
- **Prior to reassembling, clean all the parts in solvent, dry them, and apply manual transmission fluid (MTF) to any contact surfaces.**
- **Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.**

1. Install the magnet (A) and the differential assembly (B).

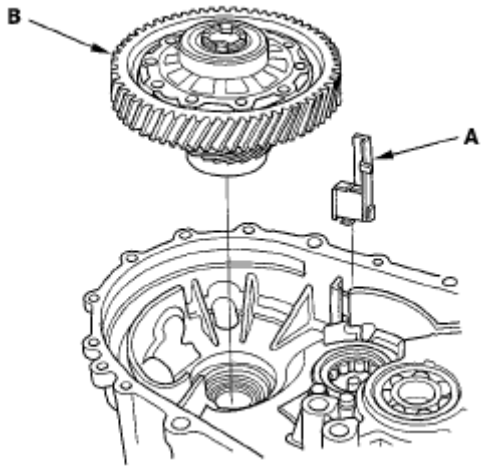


Fig. 172: Identifying Magnet And Differential Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the 28 mm spring washer (A) and the 28 mm washer (B) over the ball bearing (C).

NOTE: Install the spring washer in the direction shown.

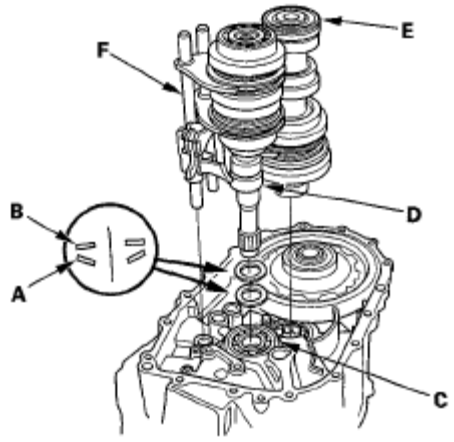


Fig. 173: Identifying Spring Washer, Washer And Ball Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Apply tape to the mainshaft (D) splines to protect the seal. Install the mainshaft assembly and the countershaft (E) into the shift forks (F), and install them as an assembly.
4. Install the reverse shift fork.

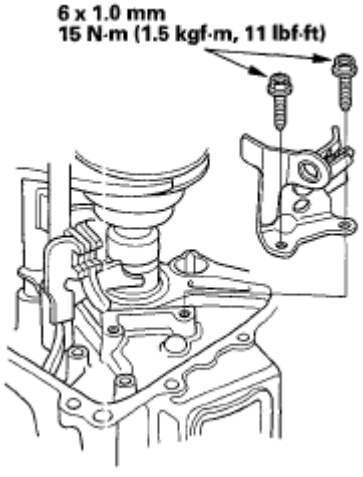


Fig. 174: Identifying Mainshaft, Countershaft & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the reverse idler gear (A) and the reverse gear shaft (B) by aligning the mark (C) with the reverse gear shaft hole (D).

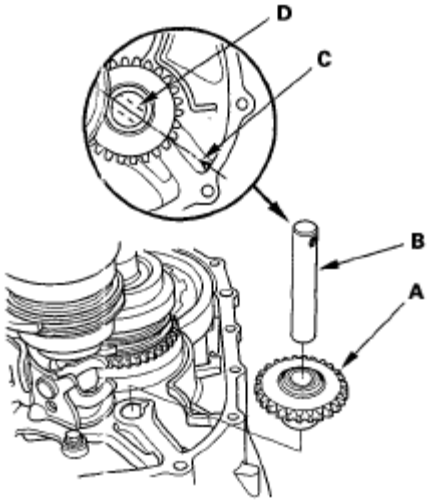


Fig. 175: Identifying Reverse Idler Gear, Reverse Gear Shaft And Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Select the proper size 72 mm shim (A) according to the measurements made during the Mainshaft Thrust Clearance Adjustment (see **MAINSHAFT THRUST CLEARANCE ADJUSTMENT**). Install the oil gutter plate (B), the oil guide plate M, and the 72 mm shim into the transmission housing (C).

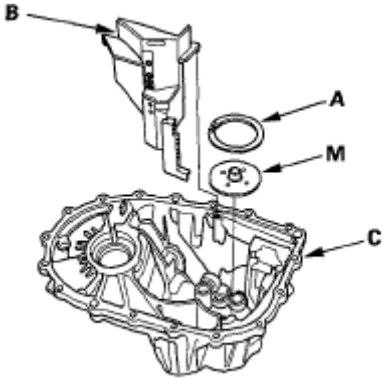


Fig. 176: Identifying Oil Gutter Plate And Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Clean any dirt and oil from the transmission housing sealing surface.
8. Apply liquid gasket, P/N 08718-0001, evenly to the mating surface of the transmission housing and the clutch housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

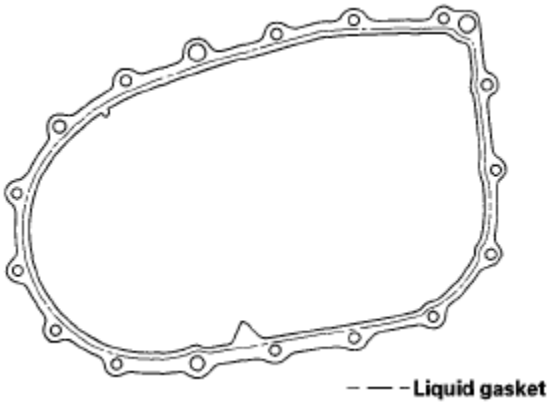


Fig. 177: Applying Liquid Gasket To Mating Surface Of Transmission Housing And Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the three 14 x 20 mm dowel pins (A).

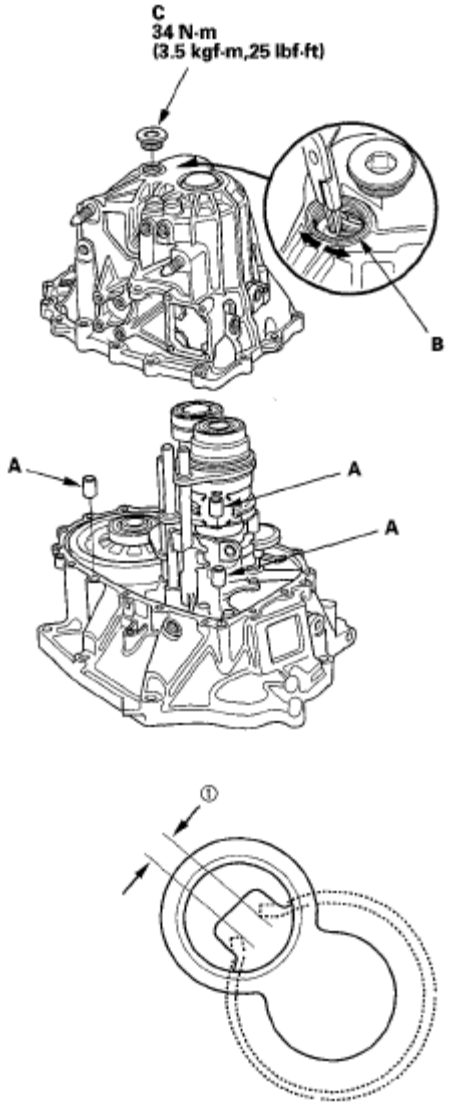


Fig. 178: Identifying Dowel Pins w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Place the transmission housing over the clutch housing, being careful to line up the shafts.
11. Lower the transmission housing the rest of the way as you expand the 72 mm snap ring (B). Release the snap ring so it seats in the groove of the countershaft bearing.
12. Make sure the 72 mm snap ring is securely seated in the groove of the countershaft bearing.

Dimension (1) as installed: 3.3-6.0 mm (0.13-0.24 in.)

13. Apply liquid gasket, P/N 08718-0001, evenly to the threads of the 32 mm searing cap (C) mating surface of the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

14. Install the transmission hanger A, the transmission hanger B, the harness bracket (C), and the 8 mm flange bolts finger-tight.

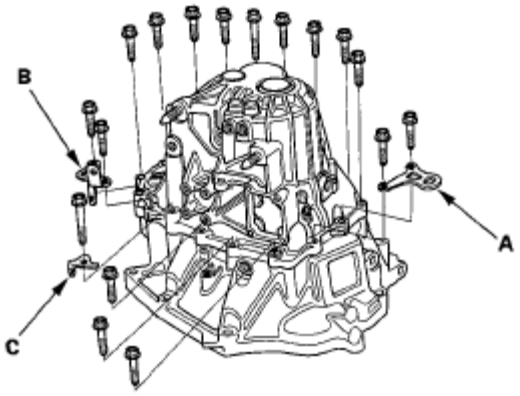


Fig. 179: Identifying Transmission Hanger A, Transmission Hanger B And Harness Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Tighten the 8 mm flange bolts in a crisscross pattern in several steps.

Specified Torque:

8 x 1.25 mm

27 N.m (2.8 kgf.m, 20 lbf.ft)

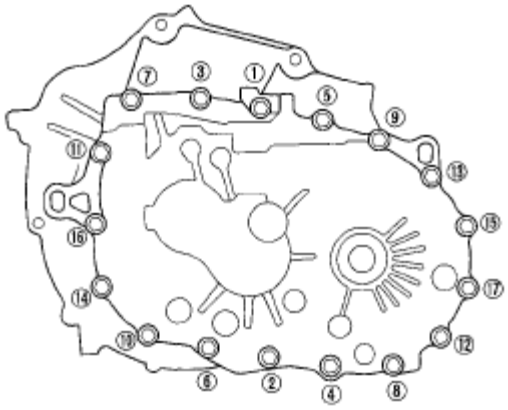


Fig. 180: Tightening Flange Bolts w/Torque Spec. In Crisscross Pattern
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Clean any dirt or oil from the change lever assembly sealing surface.
17. Apply liquid gasket, P/N 08718-0001, evenly to the mating surface of the charge lever assembly and the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**
- **Allow it to cure at least 30 minutes after assembly before filling the transmission with MTF.**

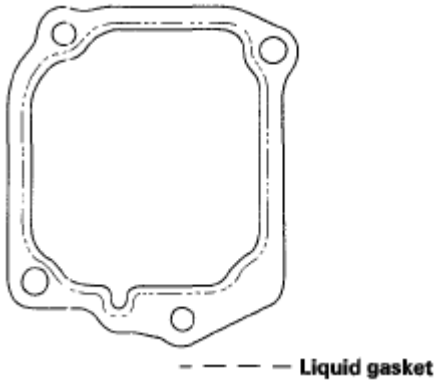


Fig. 181: Applying Liquid Gasket To Mating Surface

Of Charge Lever Assembly And Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the 8 x 14 mm dowel pins (B), change lever assembly (C), and harness bracket A.

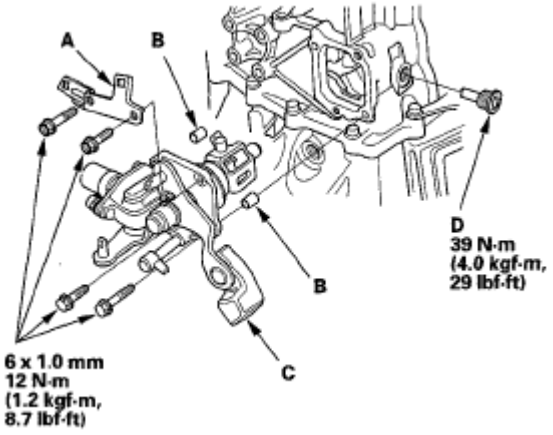


Fig. 182: Identifying Dowel Pins, Change Lever Assembly & Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Apply liquid gasket, P/N 08718-0001, evenly to the mating surface of the threads of the inter lock bolt (D) and transmission housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

20. Install the drain plug (A) and 10 mm flange bolt (B) with new sealing washers (C). Install the filler plug (D) finger-tight.

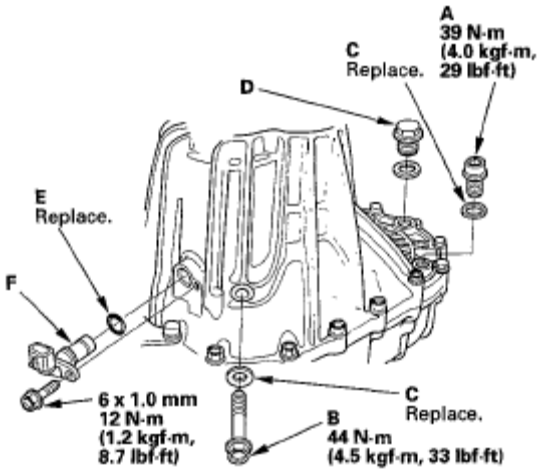


Fig. 183: Identifying Drain Plug, Flange Bolt, Sealing Washers & Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Apply MTF to the new O-ring (E). Then install the new O-ring, and output shaft (countershaft) speed sensor (F).
22. Install the detent bolts (A), the springs, and steel balls with new washers (B). Then install the transmission hanger (C).

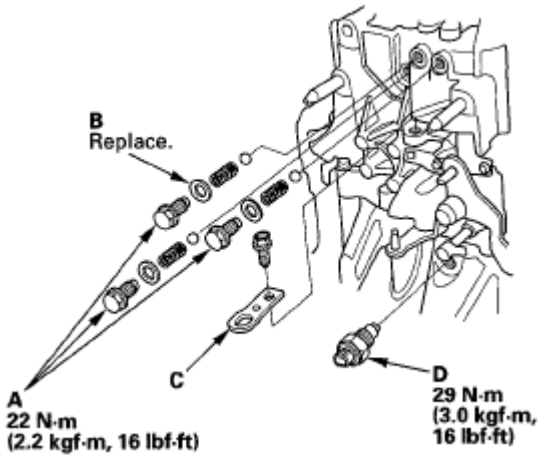


Fig. 184: Identifying Detent Bolts, Springs, Steel Balls, New Washers & Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Apply liquid gasket, P/N 08718-0001 evenly to the threads of the back-up light switch (D) mating surface of the transmission housing. Install the component

within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

24. Install the 20 mm bolt (A) and new 20 mm washer (B).

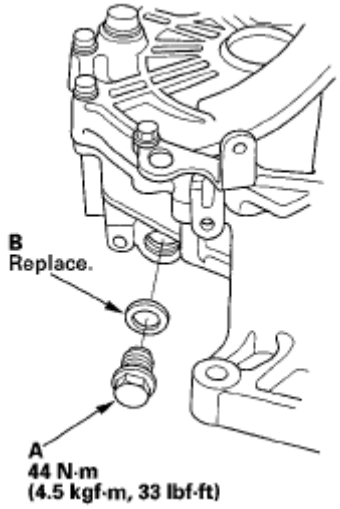


Fig. 185: Identifying Bolt, Washer & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

GEARSHIFT MECHANISM REPLACEMENT

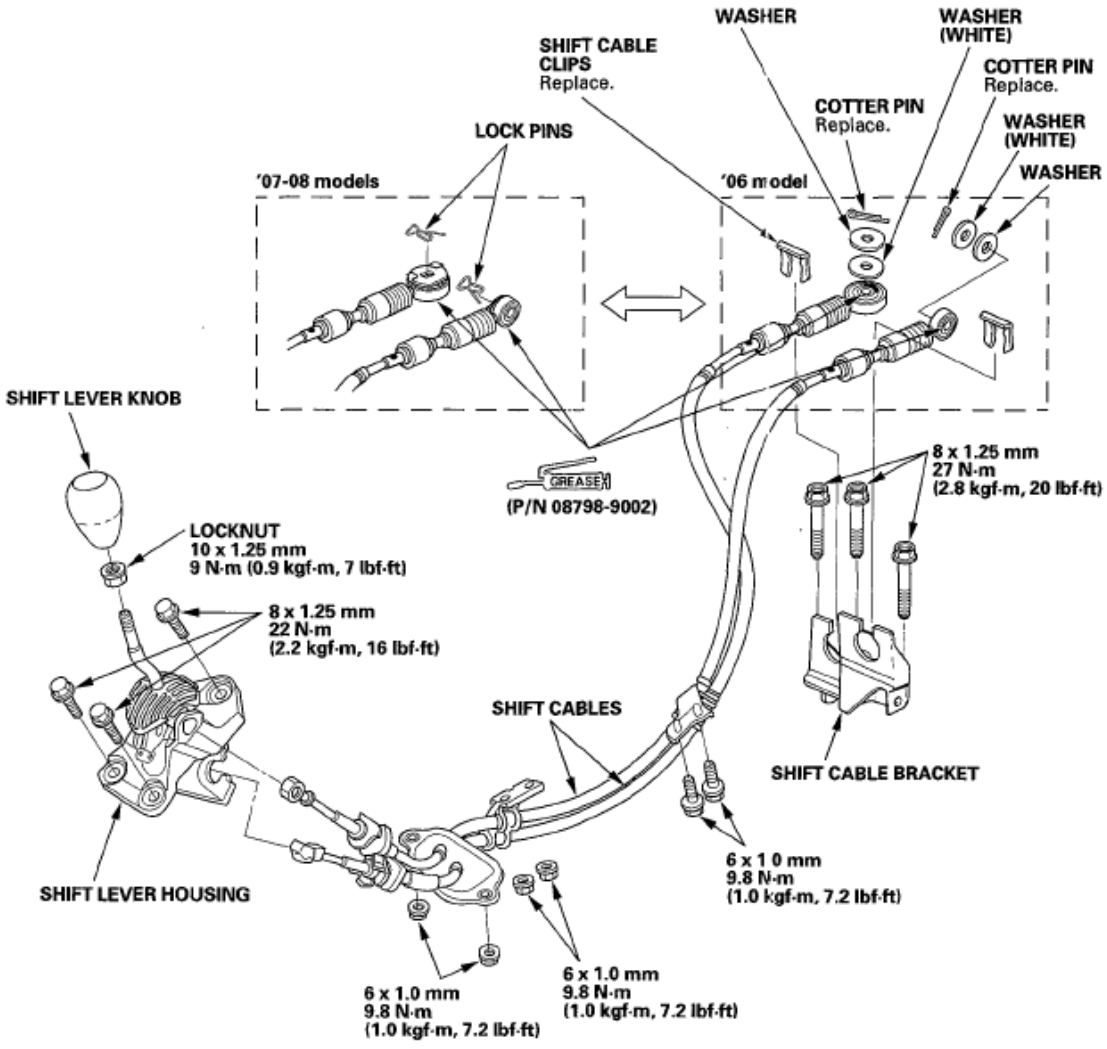

WASHER
WASHER (WHITE)
SHIFT CABLE CLIPS Replace.
COTTER PIN Replace.
COTTER PIN Replace.
WASHER (WHITE)
LOCK PINS
WASHER
'07-08 models
'06 model
SHIFT LEVER KNOB
GREASE
(P/N 08798-9002)
8 x 1.25 mm 27 N·m (2.8 kgf·m, 20 lbf·ft)
LOCKNUT 10 x 1.25 mm 9 N·m (0.9 kgf·m, 7 lbf·ft)
8 x 1.25 mm 22 N·m (2.2 kgf·m, 16 lbf·ft)
SHIFT CABLES
SHIFT CABLE BRACKET
6 x 1.0 mm 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
SHIFT LEVER HOUSING
6 x 1.0 mm 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
6 x 1.0 mm 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

Fig. 186: Identifying Gearshift Mechanism Components w/Torque Specs. Courtesy of AMERICAN HONDA MOTOR CO., INC.

M/T DIFFERENTIAL

COMPONENT LOCATION INDEX

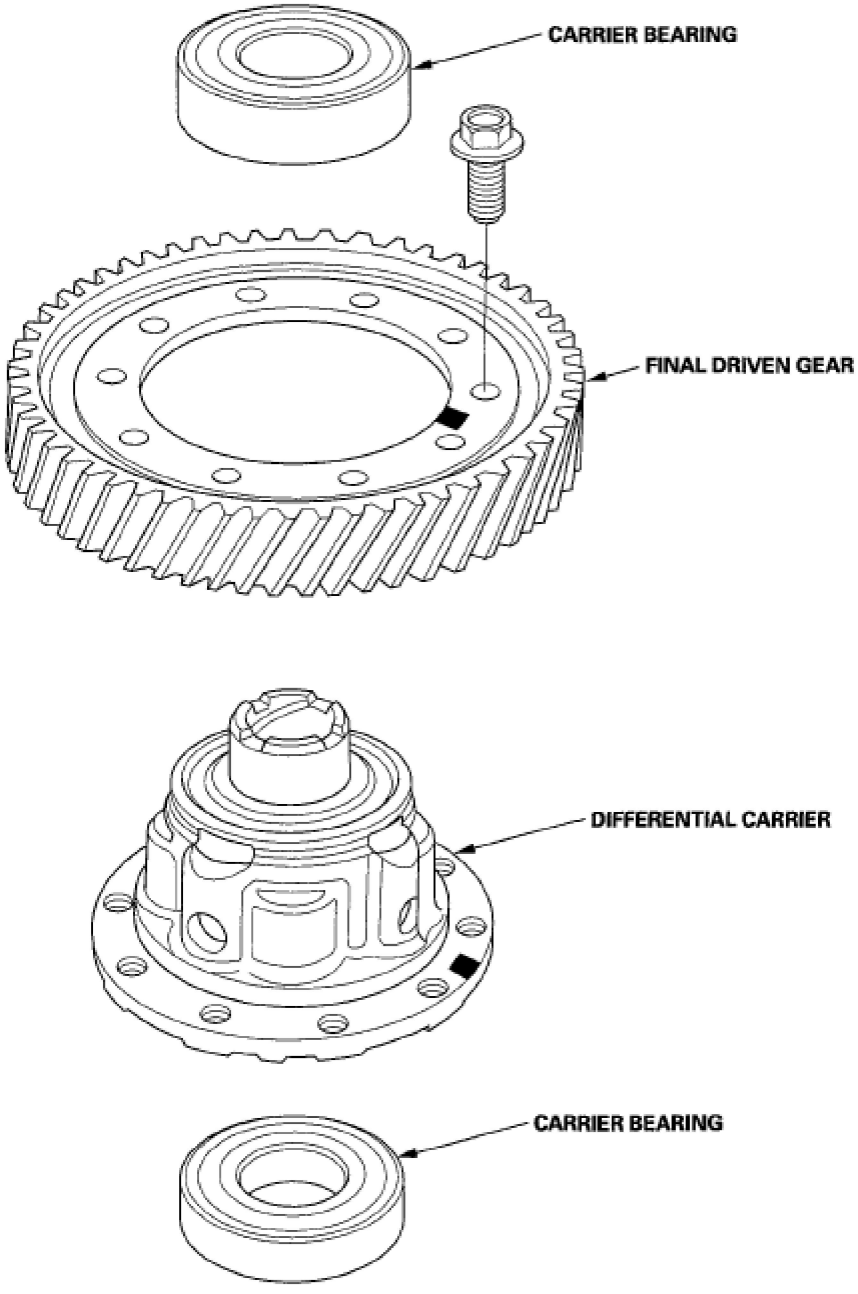


Fig. 187: Identifying M/T Differential Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DIFFERENTIAL CARRIER, FINAL DRIVEN GEAR REPLACEMENT

1. Remove the bolts in a crisscross pattern in several steps, then remove the final driven gear (A) from the differential carrier (B).

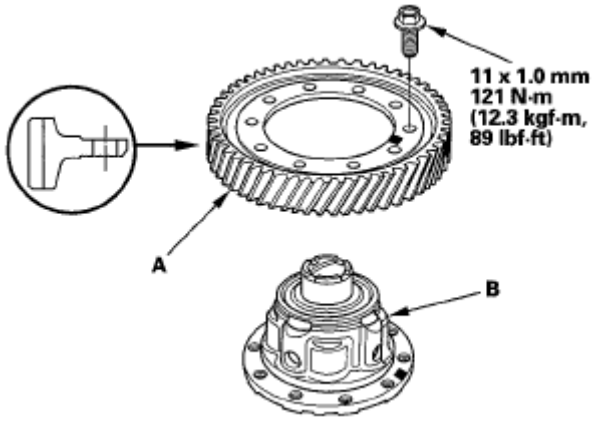


Fig. 188: Identifying Final Driven Gear, Differential Carrier & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the final driven gear with the chamfer on the inside diameter facing the carrier. Tighten the bolts in a crisscross pattern in several steps.

CARRIER BEARING REPLACEMENT

Special Tools Required

Driver, 40 mm I.D. 07746-0030100

1. Check the carrier bearings for wear and rough rotation. If they rotate smoothly and their rollers show no signs of wear, the bearings are OK.
2. Remove the carrier bearings (A) with a commercially available bearing puller (B).

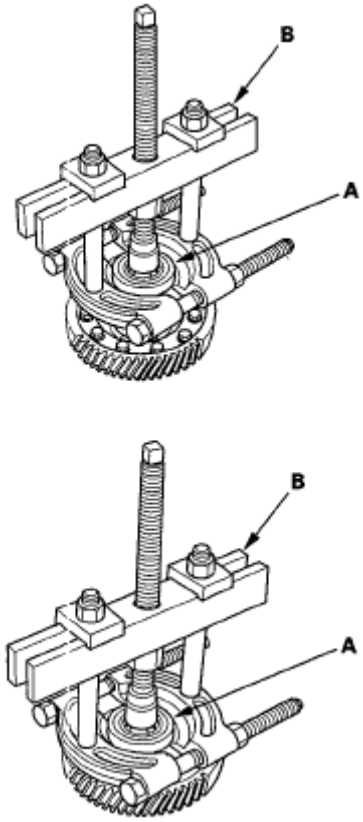


Fig. 189: Identifying Carrier Bearings And Bearing Puller
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the new bearings (A) with the 40 mm I.D. driver (B) and a press. Press each bearing on until it bottoms. There should be no clearance between the bearings and the carrier.

NOTE: Place the seal (C) part of the bearing towards the outside of the differential, and install it.

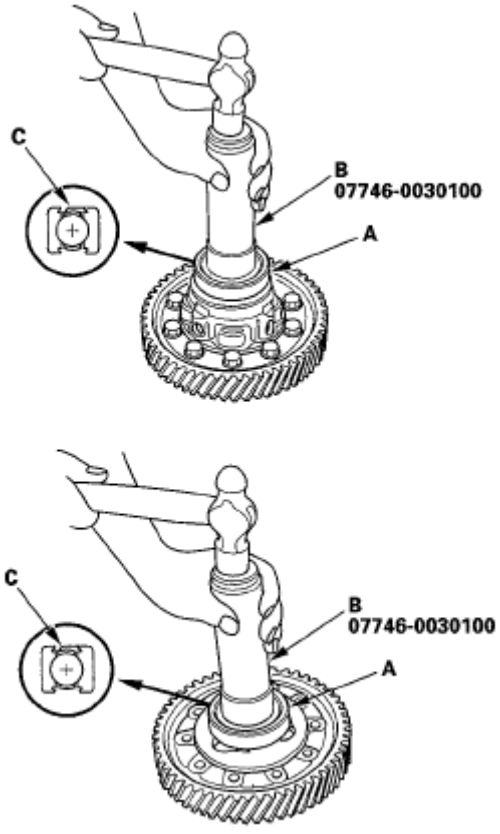


Fig. 190: Identifying Bearings, I.D. Driver And Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OIL SEAL REPLACEMENT

Special Tools Required

- Oil seal driver attachment 07NAD-P20A100
- Driver 07749-0010000

1. Remove the oil seal (A) from the transmission housing (B).

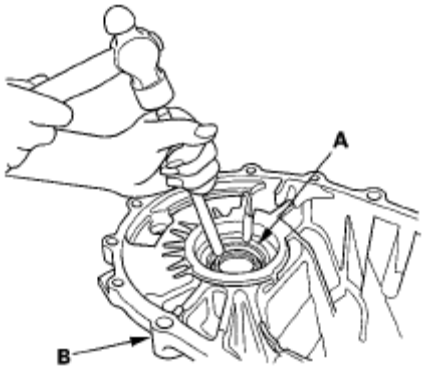


Fig. 191: Identifying Oil Seal And Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the oil seal (A) from the clutch housing (B).

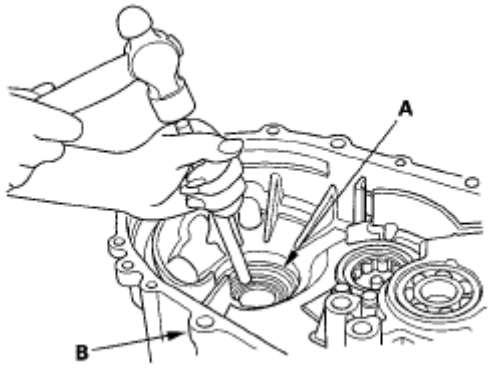


Fig. 192: Identifying Oil Seal And Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the new oil seal in the transmission housing with the driver (A) and oil seal driver attachment (B).

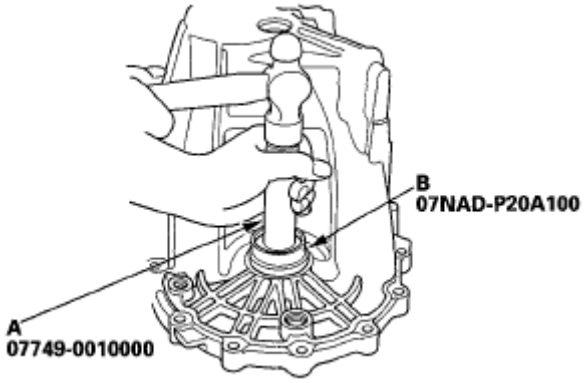


Fig. 193: Identifying Driver And Oil Seal Driver Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the new oil seal in the clutch housing with the driver (A) and oil seal driver attachment (B).

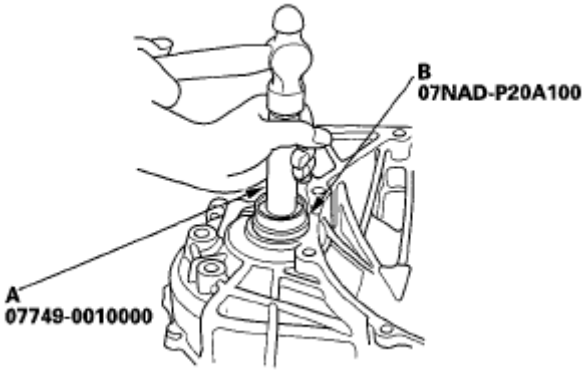


Fig. 194: Identifying Driver And Oil Seal Driver Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DIFFERENTIAL THRUST CLEARANCE ADJUSTMENT

Special Tools Required

Driver, 40 mm I.D. 07746-0030100

1. If you removed the 80 mm shim from the transmission housing, reinstall the same sized shim.

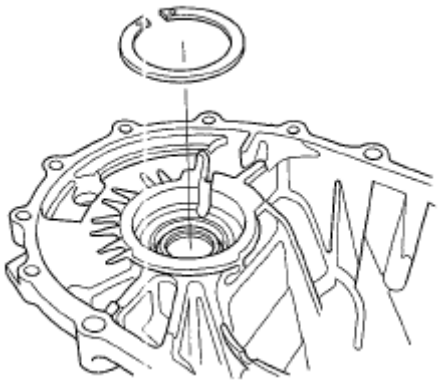


Fig. 195: Identifying Shim
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the differential assembly into the clutch housing.

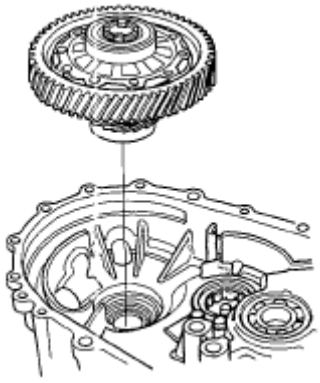


Fig. 196: Identifying Differential Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the transmission housing onto the clutch housing, then tighten the 8 mm flange bolts in a crisscross pattern in several steps (see step 15).

   Specified Torque

   8 x 1.25 mm

   27 N.m (2.8 kgf.m, 20 lbf.ft)

4. Use the 40 mm I.D. driver (A) to bottom the differential assembly in the clutch housing.

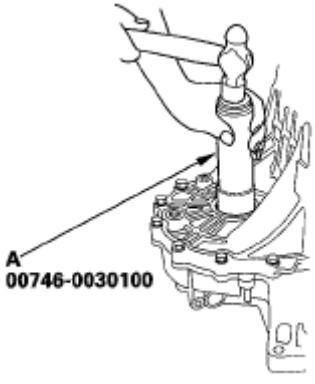


Fig. 197: Identifying I.D. Driver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the clearance between the 80 mm shim and the bearing outer race in transmission housing.

   Standard: 0-0.10 mm (0-0.004 in.)

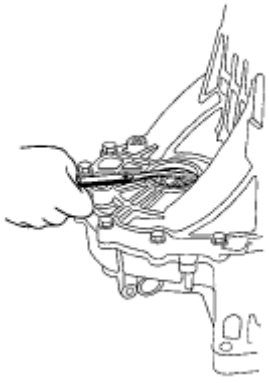


Fig. 198: Measuring Clearance Between Shim And Bearing Outer Race In Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the clearance is more than the standard, select a new 80 mm shim from the following table. If the clearance measured in step 5 is within the standard, go to step 9.

   80 mm Shim

PART THICKNESS CHART

	Part Number	Thickness
A	41441-PL3-B00	1.0 mm (0.0394 in.)
B	41442-PL3-B00	1.1 mm (0.0433 in.)
C	41443-PL3-B00	1.2 mm (0.0472 in.)
D	41444-PL3-B00	1.3 mm (0.0512 in.)
E	41445-PL3-B00	1.4 mm (0.0551 in.)
F	41446-PL3-B00	1.5 mm (0.0591 in.)
G	41447-PL3-B00	1.6 mm (0.0630 in.)
H	41448-PL3-B00	1.7 mm (0.0669 in.)
J	41449-PL3-B00	1.8 mm (0.0709 in.)

K	41450-PL3-B00	1.05 mm (0.0413 in.)
L	41451-PL3-B00	1.15 mm (0.0453 in.)
M	41452-PL3-B00	1.25 mm (0.0492 in.)
N	41453-PL3-B00	1.35 mm (0.0531 in.)
P	41454-PL3-B00	1.45 mm (0.0571 in.)
Q	41455-PL3-B00	1.55 mm (0.0610 in.)
R	41456-PL3-B00	1.65 mm (0.0650 in.)
S	41457-PL3-B00	1.75 mm (0.0689 in.)

7. Remove the bolts and transmission housing.
8. Replace the thrust shim selected in step 6, then recheck the clearance.
9. Reinstall the transmission housing.